JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER

HR-J600EK

VHS
PAL

VIDEO Plus+

SPECIFICATIONS

GENERAL

Power requirement	AC 220 – 240 V∿, 50/60 Hz
Power consumption	29 W
Temperature	
Operating	5°C to 40°C
Storage	–20°C to 60°C
Operating position	Horizontal only
Dimensions (WxHxD)	435 x 104 x 336 mm
Weight	5.5 kg
Format	VHS PAL standard
Maximum recording time (SP)	240 min. with E-240 video cassette
(LP)	480 min. with E-240 video cassette

VIDEO/AUDIO

Signal system	PAL-type colour signal and CCIR monochrome signal, 625 lines/ 50 fields
Recording system	Rotary two-head helical scan system with slant double-azimuth combination video heads
Signal-to-noise ratio	43 dB (Rohde & Schwarz noise meter)
Horizontal resolution	250 lines
Frequency range	70 Hz to 10,000 Hz (Normal audio) 20 Hz to 20,000 Hz (Hi-Fi audio)
Input/Output	21-pin scart connector RCA connectors (VIDEO IN x 1, AUDIO IN x 2, AUDIO OUT x 1)

TUNER

Tuning system	Frequency synthesized tuner
Channel coverage	UHF channels 21 – 69 (470 – 862 MHz)
Aerial output	UHF channel 36 (Adjustable 32 – 40)

ACCESSORIES

Provided accessories	RF cable, Infrared remote control unit, "R6" battery x 2, Mains power cord
Optional accessories	VPT adapter VU-V142E, PDC/VPT/STARTEXT adapter VU-V157E

Specifications shown are for SP mode unless otherwise specified.
E.&O.E. Design and specifications subject to change without notice.

COPYRIGHT © 1993 VICTOR COMPANY OF JAPAN, LTD

No. 82375
September 1993

TABLE OF CONTENTS

Section **Title** **Page**

Important Safety Precautions

INSTRUCTIONS

1. DISASSEMBLY

1.1 DISASSEMBLY 1-1
1.1.1 Top cover 1-1
1.1.2 Front panel assembly 1-1
1.1.3 Bottom cover 1-1
1.1.4 SWITCHING REGULATOR board assembly 1-2
1.1.5 DISPLAY & SWITCH board assemblies 1-2
1.1.6 Cassette housing assembly 1-2
1.1.7 PRE/REC board assembly 1-3
1.1.8 Main deck assembly 1-3
1.1.9 DECK TERMINAL board assembly 1-3
1.1.10 MAIN board assembly 1-4
1.1.11 Service position 1-4

2. MECHANISM ADJUSTEMENT

2.1 PREPARATION 2-1
2.1.1 Precautions 2-1
2.1.2 Check without cassette housing 2-1
2.1.3 Manual removal of loaded tape 2-1
2.1.4 Test equipment 2-2
2.2 MAIN MECHANISM PARTS 2-2
2.2.1 Cleaning 2-3
2.2.2 Lubrication 2-3
2.3 INSPECTION AND MAINTENANCE 2-3
2.3.1 Suggested servicing schedule for main components .. 2-3
2.4 MECHANISM DISASSEMBLY & INSTALLATION 2-4
2.4.1 Disassembly of Mechanism 2-4
2.4.2 Installation of Mechanism 2-8
2.5 Quick advice 2-15
2.6 MAIN PARTS REPLACEMENT AND ADJUSTMENT 2-16
2.6.1 stator assembly 2-16
2.6.2 Rotor assembly 2-16
2.6.3 Drum sub assembly 2-17
2.6.4 Upper Drum assembly 2-18
2.6.5 A/C head 2-19
2.7 TAPE INTERCHANGEABILITY ADJUSTMENT 2-20
2.7.1 Tilt adjustment of A/C head 2-20
2.7.2 Azimuth adjustment of A/C head 2-20
2.7.3 Height adjustment of A/C head 2-20
2.7.4 Phase(X-value) adjustment of A/C head 2-20
2.7.5 LP mode auto tracking 2-21
2.7.6 Tension pole position 2-21
2.7.7 Clutch assembly adjustment 2-21
2.7.8 SUP/TU pole base adjustment 2-21
2.7.9 Tape transport system confirmation 2-22

3. ELECTRICAL ADJUSTMENT

3.1 DECK SECTION ADJUSTMENT 3-1
3.1.1 PRECAUTION 3-1
3.1.2 SERVO CIRCUIT 3-2
3.1.3 VIDEO CIRCUIT 3-3
3.1.4 TIMER CIRCUIT 3-5
3.1.5 AUDIO CIRCUIT 3-5
3.1.6 TUNER CIRCUIT 3-6

Section **Title** **Page**

4. CHARTS AND DIAGRAMS

SCHEMATIC DIAGRAM NOTES 4-1
CIRCUIT BOARD NOTES 4-2
4.1 BOARD INTERCONNECTIONS 4-3
4.2 SYSCON/SERVO BLOCK DIAGRAM 4-5
4.3 VIDEO BLOCK DIAGRAMS 4-7
4.4 AUDIO BLOCK DIAGRAM 4-9
4.5 SWITCHING REGULATOR & MAIN (REGULATOR) SCHEMATIC DIAGRAMS 4-11
4.6 SWITCHING REGULATOR CIRCUIT BOARD 4-13
4.7 SYSTEM CONTROL SCHEMATIC DIAGRAM 4-15
4.8 SERVO SCHEMATIC DIAGRAM 4-17
4.9 VIDEO SCHEMATIC DIAGRAM 4-19
4.10 AUDIO SCHEMATIC DIAGRAM 4-21
4.11 TUNER SCHEMATIC DIAGRAM 4-23
4.12 RF SW SCHEMATIC DIAGRAM 4-25
4.13 MAIN CIRCUIT BOARD 4-27
4.14 VIDEO UNIT SCHEMATIC DIAGRAM 4-31
4.15 VIDEO UNIT CIRCUIT BOARD 4-33
4.16 TERMINAL SCHEMATIC DIAGRAM 4-35
4.17 TERMINAL CIRCUIT BOARD 4-37
4.18 AUDIO UNIT SCHEMATIC DIAGRAM 4-39
4.19 AUDIO UNIT CIRCUIT BOARD 4-41
4.20 DEMODULATOR SCHEMATIC DIAGRAM 4-43
4.21 DEMODULATOR CIRCUIT BOARD 4-45
4.22 DISPLAY/SW & SW/JACK SCHEMATIC DIAGRAMS 4-47
4.23 DISPLAY/SW & SW/JACK CIRCUIT BOARDS 4-49
4.24 PRE/REC SCHEMATIC DIAGRAM 4-51
4.25 PRE/REC CIRCUIT BOARD 4-53
4.26 DECK TERMINAL,LOADING MDA AND A/CTL HEAD SCHEMATIC DIAGRAMS 4-55
4.27 DECK TERMINAL,LOADING MDA AND A/CTL HEAD CIRCUIT BOARDS 4-56
4.28 RF CONVERTER SCHEMATIC DIAGRAM 4-57
4.29 REMOTE CONTROL SCHEMATIC DIAGRAM 4-58
4.30 WAVEFORMS 4-59

5. PARTS LIST

5.1 PACKING AND ACCESSORY ASSEMBLY<M1> 5-1
5.2 CABINET AND CHASSIS ASSEMBLY <M2> 5-2
5.3 MECHANISM ASSEMBLY <M4> 5-4
5.4 ELECTRICAL PARTS LIST 5-6
  SWITCHING REGULATOR BOARD ASSEMBLY <01> 5-6
  MAIN BOARD ASSEMBLY <03> 5-6
  VIDEO UNIT BOARD ASSEMBLY <05> 5-10
  TERMINAL BOARD ASSEMBLY <06> 5-12
  AUDIO UNIT BOARD ASSEMBLY <09> 5-12
  AUDIO /CONTROL HEAD BOARD ASSEMBLY <12> 5-13
  DEMODULATOR BOARD ASSEMBLY <14> 5-13
  DISPLAY/SWITCH BOARD ASSEMBLY <28> 5-14
  SWITCH/JACK BOARD ASSEMBLY <36> 5-15
  PRE/REC AMP BOARD ASSEMBLY <43> 5-15
  DECK TERMINAL BOARD ASSEMBLY <51> 5-16
  LOADING MDA BOARD ASSEMBLY <55> 5-17

6. TECHNICAL INFORMATION

6.1 MECHACON CIRCUIT 6-1
6.2 TIMER CIRCUIT 6-3

Safety Precautions

1. The design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorised in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits.
2. Any unauthorised design alterations or additions will void the manufacturer's guarantee ; furthermore the manufacturer cannot accept responsibility for personal injury or property damage resulting therefrom.
3. Essential safety critical components are identified by (⚠) on the Parts List and by shading on the schematics ,and must never be replaced by parts other than those listed in the manual. Please note however that many electrical and mechanical parts in the product have special safety related characteristics . These characteristics are often not evident from visual inspection . Parts other than specified by the manufacturer may not have the same safety characteristics as the recommended replacement parts shown in the Parts List of the service manual and may create shock , fire , or other hazards .
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.

Warning

1. Service should be performed by qualified personnel only.
2. This equipment has been designed and manufactured to meet international safety standards.
3. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
4. Repairs must be made in accordance with the relevant safety standards.
5. It is essential that safety critical components are replaced by approved parts.
6. If mains voltage selector is provided, check setting for local voltage .

INSTRUCTIONS

Safety Precautions

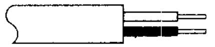
The rating plate and the safety caution are on the rear of the unit.

WARNING: DANGEROUS VOLTAGE INSIDE
WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

IMPORTANT

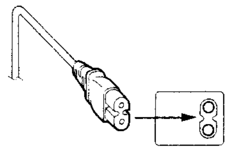
Connection to the mains supply in the United Kingdom.

DO NOT cut off the mains plug from this equipment. If the plug fitted is not suitable for the power points in your home or the cable is too short to reach a power point, then obtain a proper safety approved extension lead/adapter or consult your dealer.
BE SURE to replace the fuse only with an identical approved type, as originally fitted, and to replace the fuse cover.
If nonetheless the mains plug is cut off remove the fuse and dispose of the plug immediately, to avoid a possible shock hazard by inadvertent connection to the mains supply.
If this product is not supplied fitted with a mains plug then follow the instructions given below:
DO NOT make any connection to the Larger Terminal coded E or Green.
The wires in the mains lead are coloured in accordance with the following code:



If these colours do not correspond with the terminal identifications of your plug, connect as follows:
Blue wire to terminal coded N (Neutral) or coloured Black.
Brown wire to terminal coded L (Live) or coloured Red.
If in doubt — consult a competent electrician.

CAUTION



- To avoid electric shock or damage to the unit, first firmly insert the small end of the mains power cord into the recorder until it is no longer wobbly, and then plug the larger end of the mains power cord into an mains outlet.
- When you are not using the recorder for a long period of time, it is recommended that you disconnect the power cord from the mains outlet.
- Dangerous voltage inside. Refer internal servicing to qualified service personnel. To prevent electric shock or fire hazard, remove the power cord from the mains outlet prior to connecting or disconnecting any signal lead or aerial.

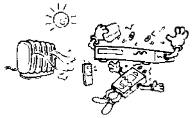
IMPORTANT

- Please read the various precautions on p. 2 – 3 of this instruction manual before installing or operating the recorder.
- It should be noted that it may be unlawful to re-record pre-recorded tapes, records, or discs without the consent of the owner of copyright in the sound or video recording, broadcast or cable programme and in any literary, dramatic, musical, or artistic work embodied therein.

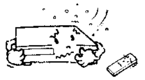
The OPERATE button does not completely shut off mains power from the unit, but switches operating current on and off.

This unit is produced to comply with Directives 76/889/EEC, 82/499/EEC, 87/308/EEC and Standard IEC Publ. 65.

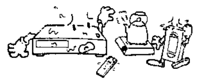
Video tapes recorded with this video recorder in the LP (Long Play) mode cannot be played back on a single-speed video recorder.



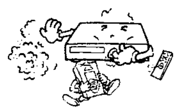
Avoid extreme heat and direct sunlight



Avoid extreme cold

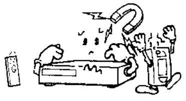


Avoid extreme humidity



Avoid dust

Avoid places subject to vibrations



Avoid strong magnetic fields

Some Do's And Dont's On The Safe Use Of Equipment

This equipment has been designed and manufactured to meet international safety standards but, like any electrical equipment, care must be taken if you are to obtain the best results and safety is to be assured.

DO read the operating instructions before you attempt to use the equipment.

DO ensure that all electrical connections (including the mains plug, extension leads and interconnections between pieces of equipment) are properly made and in accordance with the manufacturer's instructions. Switch off and withdraw the mains plug when making or changing connections.

DO consult your dealer if you are ever in doubt about the installation, operation or safety of your equipment.

DO be careful with glass panels or doors on equipment.

DON'T continue to operate the equipment if you are in any doubt about it working normally, or if it is damanged in any way — switch off, withdraw the mains plug and consult your dealer.

DON'T remove any fixed cover as this may expose dangerous voltages.

DON'T leave equipment switched on when it is unattended unless it is specifically stated that it is designed for unattended operation or has a standby mode. Switch off using the switch on the equipment and make sure that your family knows how to do this. Special arrangements may need to be made for infirm or handicapped people.

DON'T use equipment such as personal stereos or radios so that you are distracted from the requirements of road safety. It is illegal to watch television whilst driving.

DON'T listen to headphones at high volume, as such use can permanently damage your hearing.

DON'T obstruct the ventilation of the equipment, for example with curtains or soft furnishings. Overheating will cause damage and shorten the life of the equipment.

DON'T use makeshift stands and NEVER fix legs with wood screws — to ensure complete safety always fit the manufacturer's approved stand or legs with the fixings provided according to the instructions.

DON'T allow electrical equipment to be exposed to rain or moisture.

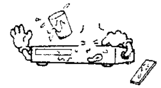
ABOVE ALL

— NEVER let anyone especially children push anything into holes, slots or any other opening in the case — this could result in a fatal electrical shock;

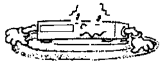
— NEVER guess or take chances with electrical equipment of any kind — it is better to be safe than sorry!

Please follow these safety precautions. Not doing so may result in damage to the recorder, remote control, or video cassette.

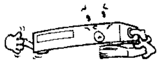
Do not place anything heavy on the recorder or remote control



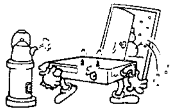
Do not place anything which might spill on top of the recorder or remote control



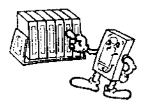
Do not place the recorder on cushions, pillows, or thick carpeting



Use the recorder in a stable, horizontal position only



Beware of moisture condensation
Moisture in the air will con-dense on the recorder when you move it from a cold place to a warm place, or under extremely humid conditions — just as water droplets form on the surface of a glass filled with cold liquid. Moisture condensation on the head drum will cause damage to the tape. In conditions where conden-sation may occur, keep the recorder's power turned on for a few hours to let the moisture dry.



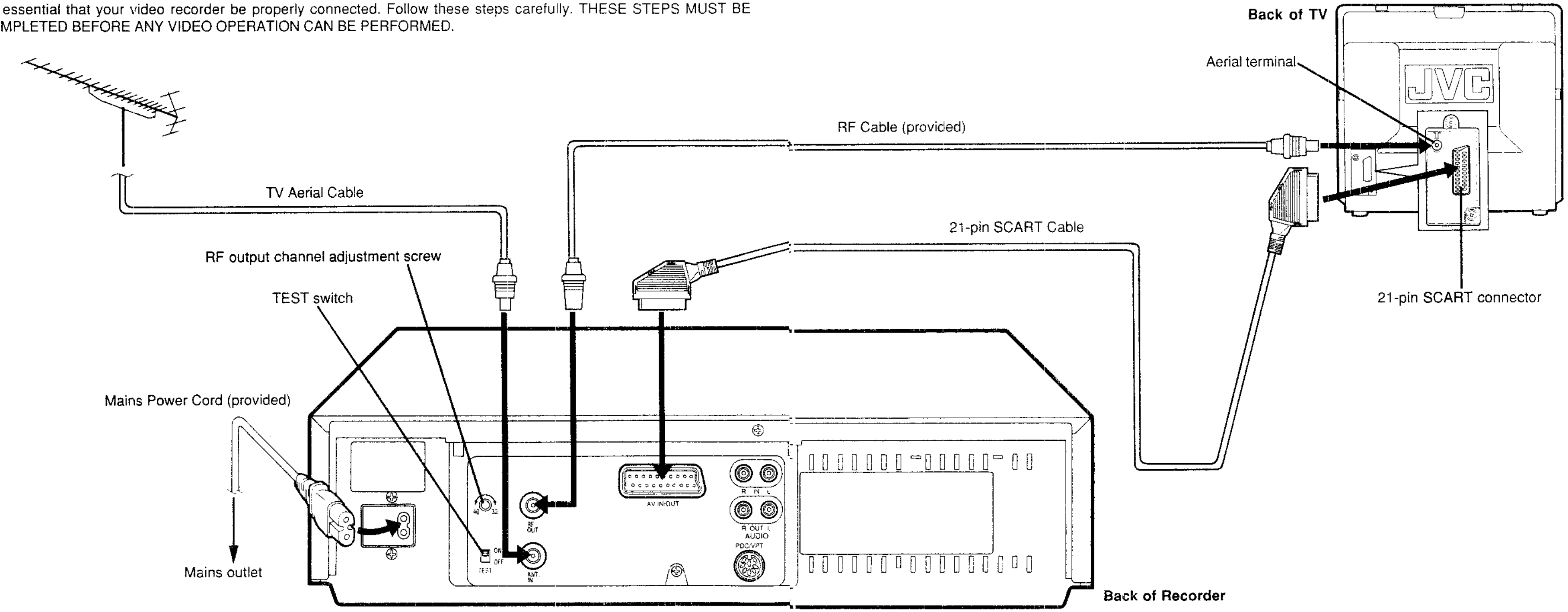
Place cassettes in cassette cases and store vertically

When transporting

- Be sure to remove cassette from recorder before packing
- Avoid violent shocks to the recorder during packing and transport

Installation

It's essential that your video recorder be properly connected. Follow these steps carefully. THESE STEPS MUST BE COMPLETED BEFORE ANY VIDEO OPERATION CAN BE PERFORMED.


Back of TV
Aerial terminal
JVC
RF Cable (provided)
TV Aerial Cable
21-pin SCART Cable
21-pin SCART connector
RF output channel adjustment screw
TEST switch
Mains Power Cord (provided)
Mains outlet
40 32
RF OUT
ANT. IN
ON OFF TEST
AV IN/OUT
R IN L
R OUT L
AUDIO
PDC/VPT
Back of Recorder

RECORDER-TO-TV CONNECTION

RF CONNECTION

For TV sets without AV input terminals:

1. Connect the TV aerial cable to the recorder.
2. Connect the recorder with the provided RF cable to the TV's aerial terminal.

AV CONNECTION

For TV sets with AV input terminals:

1. Connect the aerial, recorder and TV as per "RF CONNECTION".
2. Connect the recorder with an optional SCART cable to the TV's 21-pin SCART connector.

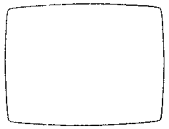
CONNECT RECORDER TO MAINS

1. First, firmly insert the small end of the mains power cord into the recorder, and then plug the larger end of the mains power cord into mains outlet.

TUNE THE TV TO YOUR VIDEO RECORDER

The video recorder sends picture and sound signals via the RF connecting cable to your TV on UHF channel 36.

TEST SIGNAL



1. Turn on the recorder.
2. Set the TEST switch to ON.
3. Set your TV to the video preset. Tune the TV to bring the two vertical white bars on the screen most clearly. (UHF/CH 36)
   - ■ Your TV should be set to the preset designated for use with a video recorder or to a spare preset if there is not a specified video preset on your TV.
4. Reset the TEST switch to OFF.

NOTE:

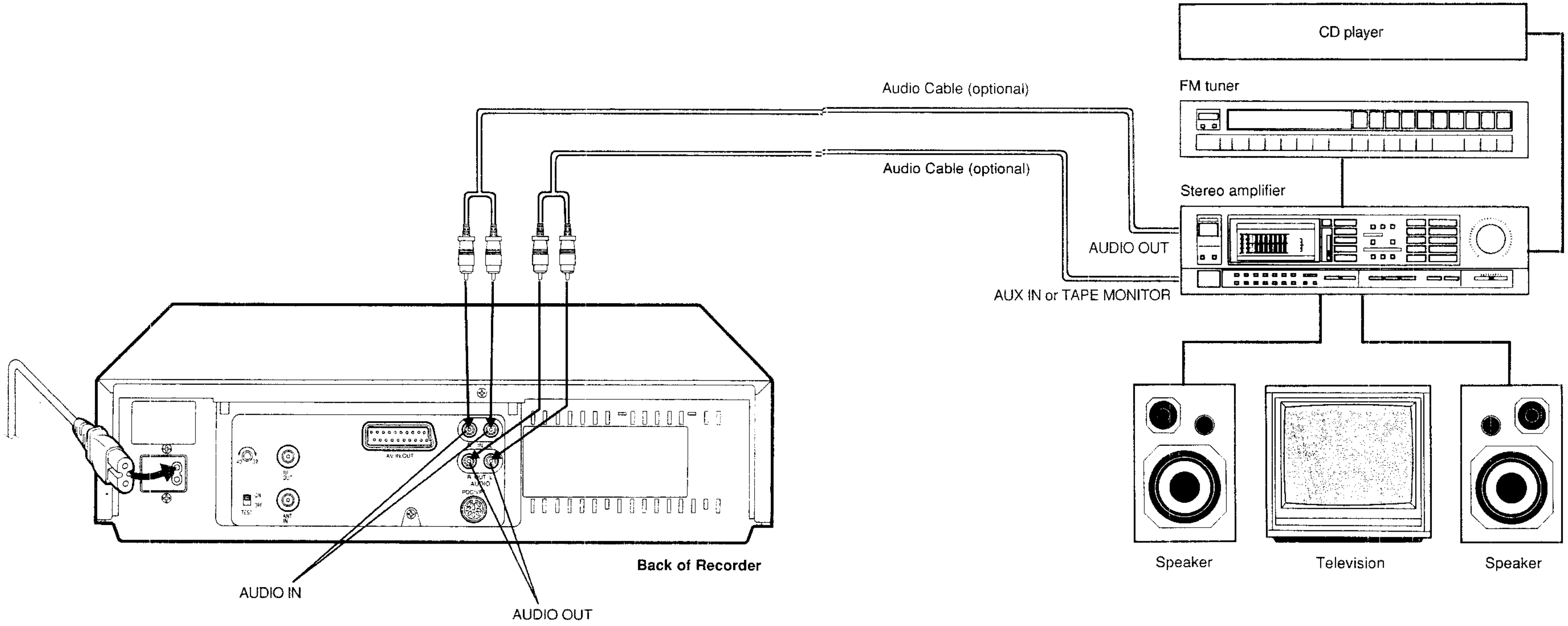
If some interference noise is continually seen on the screen, consult your JVC dealer.

IMPORTANT:

To operate the recorder with your TV using the RF connection, it is always necessary to set your TV's preset to the VIDEO preset. With an AV connection, set the TV to the VIDEO (or AV) mode.

Installation (cont'd)

If you have a Hi-Fi stereo system and would like to connect your video recorder to it so that the sound can be heard through your Hi-Fi system, please make these additional connections:


CD player
FM tuner
Audio Cable (optional)
Audio Cable (optional)
Stereo amplifier
AUDIO OUT
AUX IN or TAPE MONITOR
Speaker
Television
Speaker
Back of Recorder
AUDIO IN
AUDIO OUT

TO CONNECT TO A STEREO SYSTEM

1. Connect the AUDIO IN L and R connectors of the recorder to the recording output terminals of the amplifier.
2. Connect the AUDIO OUT L and R connectors of the recorder to the AUX IN or TAPE MONITOR terminals of the amplifier.

NOTES:

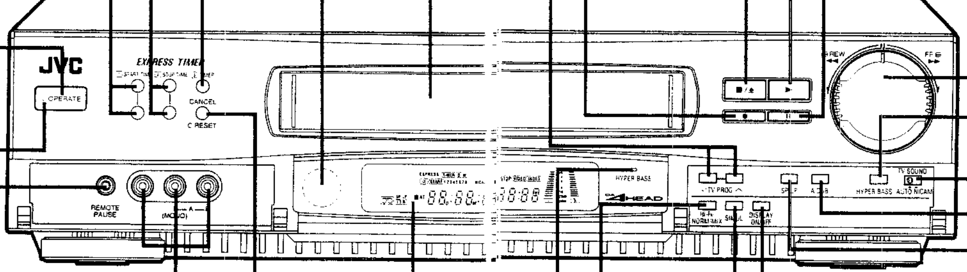
- *Make sure L and R are correct when connecting the audio input and output connectors of the recorder to a stereo amplifier.*
- *If NICAM TV broadcasts are receivable in your area, this recorder can record them independently of the TV set and play them back through the connected audio system.*
- *When listening to sound from the connected stereo system, turn down the sound volume of the TV completely.*

CAUTION:

- This recorder has a dynamic range of more than 90 dB with regards to its hi-fi audio capability. It is recommended that you check the maximum level if you are going to listen to the hi-fi audio signals through a stereo amplifier. A sudden surge in speaker input may cause speaker damage.
- Some speakers and televisions are specially shielded to prevent television interference. If both are of the non-shielded type, do not place the speakers adjacent to the TV set, otherwise the video playback picture may be adversely affected.

Controls And Indicators

Front Panel



TIMER button
Press to engage the Timer Standby mode.

STOP TIME buttons
Press to set the stop time in Express Timer programming.

START TIME buttons
Press to set the start time in Express Timer programming. (☞ p.30).

OPERATE button
Press to turn the recorder ON or OFF. Loading a cassette also turns the power on.

OPERATE indicator
Lights up when the recorder is turned ON.

REMOTE PAUSE connector
When using this recorder as the source player, connect to the PAUSE OUT terminal of a second JVC recorder (if so-equipped) for synchronized preroll operation. This terminal can also be used for editing from a JVC camcorder using the Master Edit Control system.

VIDEO/AUDIO input connectors
Connect a camcorder or another recorder for editing. (☞ p.37).

Cassette loading slot
Insert a VHS cassette. The door will close and the "cassette loaded" indicator will appear on the FDP (fluorescent display panel).

WARNING
- *Do not insert fingers or foreign objects into the cassette loading slot since this could lead to injury or damage to the mechanism. Be especially careful with children.*
- *Do not try to pull out a cassette once automatic loading has started.*

Infrared beam receiving window
Aim the remote control unit toward this.

CANCEL/COUNTER RESET button
- Press to cancel a program in the Timer Set mode.
- Press to reset the counter reading to "0:00:00".

Fluorescent Display Panel (FDP)
(☞ p.10)

TV PROG(ramme) buttons
Press either button to scan to a desired preset.

REC/ITR button
- Press once to start recording.
- Press twice to engage Instant Recording (ITR).
- Also use to set the required recording time for ITR.

STOP/EJECT button
- Press to stop the tape.
- If already stopped, press to eject the tape.

DISPLAY ON/OFF button
Press to turn the display panel ON or OFF.

SIMUL(cast) button
Press to allow simulcast recording. (☞ p.25)

Hi-Fi/NORM/MIX button
Press to select the soundtrack.
- Hi-Fi: The Hi-Fi (stereo) tracks.
- NORM: The normal (monaural) track.
- MIX: Both the Hi-Fi and normal tracks.

HYPER BASS indicator
Lights up when the Hyper-Bass function is turned ON.

PLAY button
- Press to play back a tape.
- Press to cancel the Pause/Still/Slow or Shuttle Search.
- Press to start recording from the Record-Pause mode.

PAUSE/STILL button
- Press while in the Record mode to stop the tape temporarily to avoid recording of unwanted material.
- Press while in the Play mode to view a still picture.
- The still picture can be advanced each time this button is pressed.

Shuttle dial
- During Stop : To rewind or fast-forward the tape, turn the shuttle in the appropriate direction and release it.
- During Still or Playback : Turn the Shuttle to the right for forward slow motion and search, or left for reverse slow motion and search.

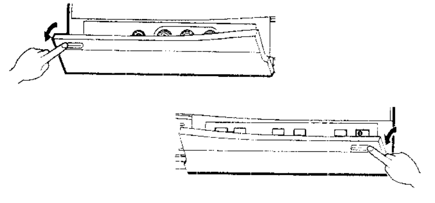
HYPER BASS button
Press to turn Hyper-Bass sound ON or OFF.

TV SOUND (AUTO/NICAM) switch
Set to record NICAM stereo broadcasts. (☞ p.24)

A. DUB. (Audio Dubbing button)
Press while in the Still mode, then press the PLAY button to start audio dubbing. (☞ p.38)

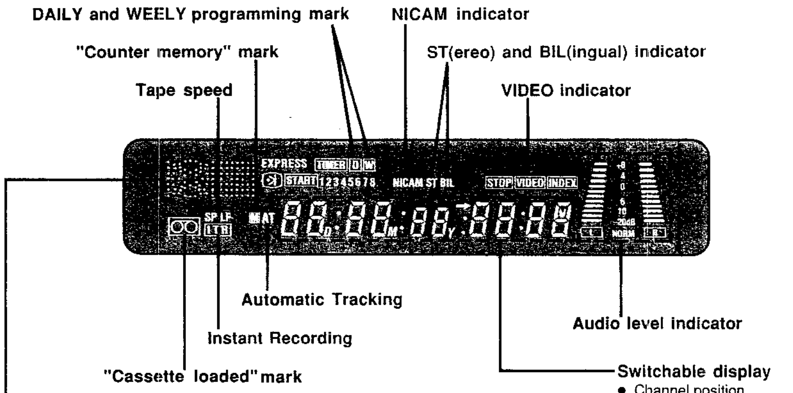
SP/LP button
Press to select the recording speed (Standard Play or Long Play).

Open lid to access connectors and butons located underneath.



Controls And Indicators (cont'd)

Display Panel


DAILY and WEELY programming mark
NICAM indicator
"Counter memory" mark
ST(ereo) and BIL(ingual) indicator
Tape speed
VIDEO indicator
EXPRESS TIMER D W
START 12345678 NICAM ST BIL STOP VIDEO INDEX
SP LP
AT
Automatic Tracking
Audio level indicator
Instant Recording
"Cassette loaded" mark

Switchable display

- Channel position
- Date/Clock
- AUX indicator(AU or F-AU)
- Child lock indicator
- Timer start/stop time
- Instant recording time
- Station number
- Realtime tape counter
- INDEX code number
- Tape remaining time
- Simulcast indicator

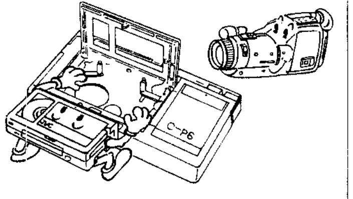
Symbolic mode indicators

PLAY:	▷	REW VARIABLE SHUTTLE SEARCH:	◁ ◁◁	RECORD:	○
FF:	▷▷	REVERSE PLAY:	◁	RECORD PAUSE:	○ ‖
REW:	◁◁	STILL: REVERSE SLOW:	◁ ‖	AUDIO DUBBING:	○
FF VARIABLE SHUTTLE SEARCH:	▷ ▷▷	STILL: FORWARD SLOW:	▷ ‖	AUDIO DUBBING PAUSE:	○ ‖

Usable Cassettes

Full-Size VHS
E-30 (SE-30**)
E-60 (SE-60**)
E-90
E-120
E-180 (SE-180**)
E-240

Compact VHS*
EC-30 (SE-C30**)
EC-45 (SE-C45**)

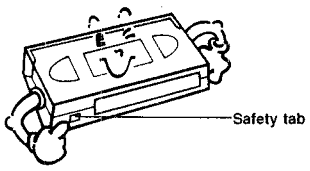


* Compact VHS camcorder recordings (PAL) can be played on this video recorder. Simply place the recorder cassette into a C-P6 Cassette Adapter and it can be used just like any full-sized VHS cassette.

** This video recorder can record on regular VHS and Super VHS cassettes. However, it will record and play back regular VHS signals only. It is not possible to play back a recorded Super VHS tape.

Accidental Erasure Prevention

To prevent accidental recording on a recorded cassette, remove its safety tab. To record on it later, cover the hole with adhesive tape.



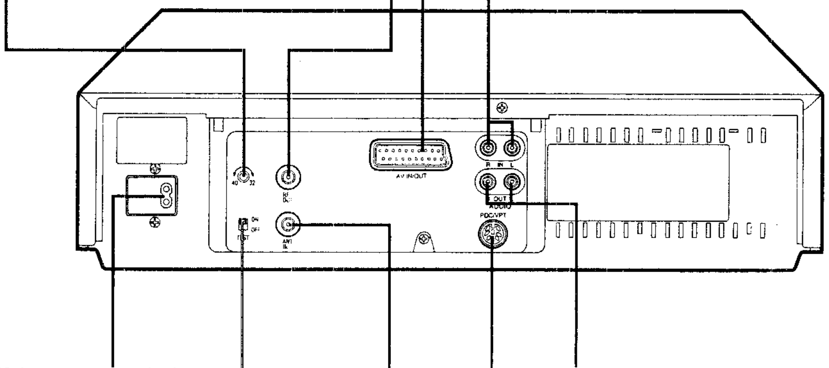
Rear Panel

RF OUT connector
Connect to the aerial terminal of a TV receiver using the provided RF cable.

RF converter frequency adjustment screw (CH40–CH32)
With RF connection, picture and sound signals are sent to channel 36 on a TV. If 36 is occupied by a local station, the channel can be adjusted by ±4 (CH 32 through CH 40).

AUDIO/VIDEO socket
A 21-pin standardised audio/video input/output (SCART) socket for AV connection to a TV or a 2nd video recorder. The input from this socket can be recorded in the AUX mode engaged by obtaining "AU" in the channel display.

AUDIO IN(put) connector (L/R)
For connection to the audio output connector of a camcorder, VCR, or another audio source.



Mains power terminal

TEST signal switch
Set to ON when tuning your TV receiver for the video preset. A test signal in the form of two vertical white bars will be available.

AUDIO OUT(put) connector (L/R)
For connection to the audio input connectors on a TV set, a VCR, or an audio tape recorder.

PDC/VPT connector
For connection of a PDC and/or VPT teletext adapter (sold optionally).

Aerial input connector (ANT. IN)
Connect an aerial to this connector.

Remote Control Unit

OPERATE button
Press to turn the recorder ON or OFF.
Keep this button pressed for 2 seconds when turning the power off to engage the Child Lock mode.

MONITOR button
Press to select the TV's operating mode
TV: For viewing broadcast programmes or tape programmes via RF OUT connection.
VIDEO: For viewing programmes via the AV connection.

Multi-purpose numeric keys
Clock setting:
Channel selection:
Timer Programming:
External Source recording:

CANCEL/C. RESET button
- Press to cancel a programme in the Timer Set mode.
- Press to reset the counter to "0H 00M 00S".
- Press to store or delete a TV station in the Tuning mode.

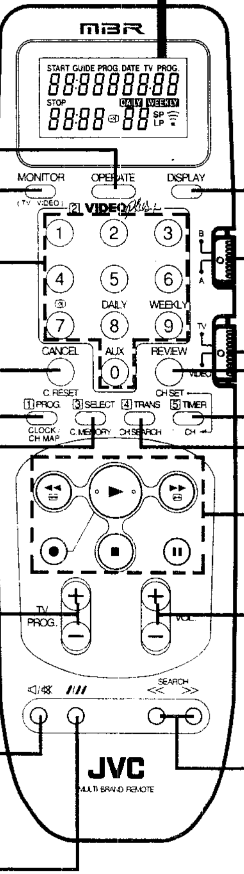
PROG./CLOCK/CH MAP button
- If the clock has not been set, press to begin clock setting.
- If the clock has already been set, each press rotates the display: Video Plus+ Timer Program → LCD Timer Program → Clock Set mode → Channel Map mode.

SELECT/C. MEMORY
- Press to change the data in the Clock Set or Timer Program mode.
- Press to engage the Counter Memory mode.
- After entering a PlusCode, press to check or correct the entered data.
- While the remote control is in the Channel Map mode, press to set or check the GUIDE PROG. and TV PROG. number.

TV PROG. button
Press to select the recorder's preset position number with the TV/VIDEO switch set to "VIDEO"; or to select the TV's preset position number with the TV/VIDEO switch set to "TV".

◁/🔇 button
- When the TV/VIDEO switch is set to "VIDEO", it works as an Audio Monitor button (☞ p. 21, 24).
- When the TV/VIDEO switch is set to "TV", press to mute the TV's sound.

/// button
- When the TV/VIDEO switch is set to "VIDEO", press to select the tape speed for recording.
- When the TV/VIDEO switch is set to "TV", it works as a digit entry button to select the TV's channel (☞ p. 39).


mBR
START GUIDE PROG. DATE TV PROG.
STOP
DAILY WEEKLY
SP LP
MONITOR
OPERATE
DISPLAY
TV VIDEO
VIDEO Plus+
1
2
3
4
5
6
7
8
9
DAILY
WEEKLY
B
A
TV
VIDEO
CANCEL
AUX
0
REVIEW
C.RESET
CH SET
1 PROG
2 SELECT
3 TRANS
5 TIMER
CLOCK CH MAP
C.MEMORY
CH SEARCH
CH
TV PROG.
VOL.
SEARCH
JVC
MULTI BRAND REMOTE

DISPLAY button
- Press to switch the display among the time, date and counter reading .
- Press to disengage the tuning mode.

A/B CODE switch
When operating two JVC video decks, use to switch this remote control from the "A" mode to "B" mode, or vice versa, depending on the deck to be controlled.

TV/VIDEO switch
Set to "VIDEO" to operate the recorder; set to "TV" to operate the TV (☞ p.39).

REVIEW/CH SET button
- Press to check timer program settings.
- Press to select the Tuning mode.

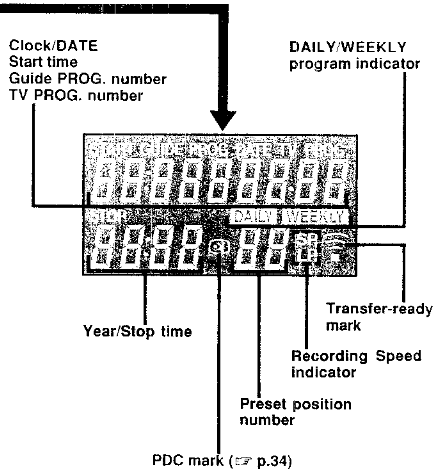
TIMER/CH button
- Press to set the recorder to Timer mode.
- Press to store a new TV station in the Tuning mode (☞ p.40).

TRANS/CH SEARCH button
- Press to transfer the data to the recorder.
- Press while in the Tuning mode to start automatic channel search.

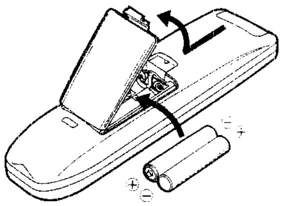
Basic Functions
◄◄/►► (Rewind)(Fast-Forward)(Shuttle Search) buttons
► (Play) button
● (Record) button
Press together with the ► button to start recording.
■ (Stop) button
II (PAUSE/STILL/SLOW) button

VOL. button
Use to adjust the TV's sound volume.

SEARCH buttons
- Press either button during playback to search for specific segments of a programme at variable speeds.
- Press either button while the tape is stopped for automatic Index Search.
- When the TV/VIDEO switch is set to "TV", it works as +10 and +20 buttons to select the TV's channel (☞ p.39).


Clock/DATE
Start time
Guide PROG. number
TV PROG. number
DAILY/WEEKLY
program indicator
START GUIDE PROG. DATE TV PROG.
STOP
DAILY WEEKLY
SP LP
Transfer-ready
mark
Year/Stop time
Recording Speed
indicator
Preset position
number
PDC mark (☞ p.34)

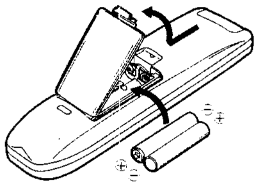
Installing Batteries
1 Open the battery compartment cover.
2 Insert 2 "R6"-size batteries (provided) in the correct directions.
3 Replace the cover.

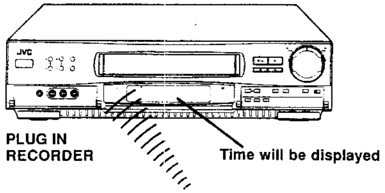


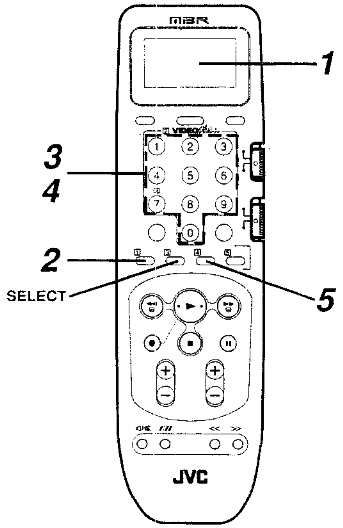
How To Use
The remote control can operate most of your video recorder's functions, as well as basic functions of TV sets of JVC and other brands. ☞ p.39.
- Point the remote control toward the sensor window.
- The maximum operating distance of the remote control is about 8 m.

Setting The Clock

Since your video recorder bases all of its timer recording start and stop "decisions" on the time kept by its built-in clock, accurate setting of this clock is crucial for proper timer-recording results. Follow these instructions to set the remote control's LCD clock and transfer its contents to the recorder's clock.



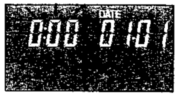




LOAD BATTERIES

1 Check the LCD.

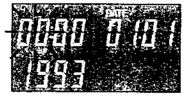
- The time display section (0:00) will be blinking.



START CLOCK SETTING

2 Press CLOCK.

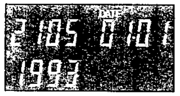
- Blinking digits will prompt you to items that can be set.



INPUT THE TIME

3 Press the appropriate numeric keys.

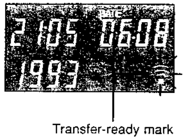
- Example: For 21:05, press 2 1 0 5.



INPUT THE DAY/MONTH/YEAR

4 Press the appropriate numeric keys.

- Example: For 6th August, press 0 6 0 8. If the year "1993" is correct, press SELECT twice. If the year is different, input it using the numeric keys.
- After setting the year, the transfer-ready mark will appear and blink.



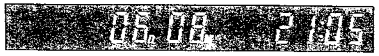
TO MAKE CORRECTIONS

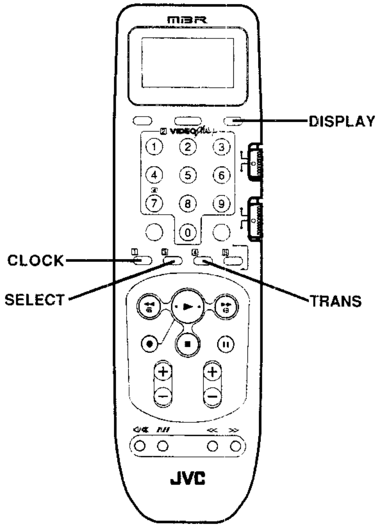
Press SELECT button so that the item you want to change blinks. Re-input that item. Continue to step 5.

SETTING THE RECORDER'S CLOCK

5 Press TRANS with the remote control directed to the recorder's Remote Sensor window.

- The remote control's clock will start. At the same time, the set data will be transferred to the recorder.





TO RESET THE CLOCK

For British Summer Time change, reset the clock as follows:

1. Press CLOCK three times.
2. Press SELECT so that the item you want to change blinks. Re-input that item.
3. Press TRANS with the remote control directed to the recorder's remote sensor window.

AFTER A POWER CUT

Since your video recorder has a 3-minute backup memory, it will not be affected by short power cuts. If mains power is unavailable for over 3 minutes, however, the recorder's display will reset to 0:00. In such a case, simply transfer the remote control's time to the recorder.

1. Press CLOCK three times.
2. Press TRANS with the remote control directed to the recorder's remote sensor window.

NOTES:

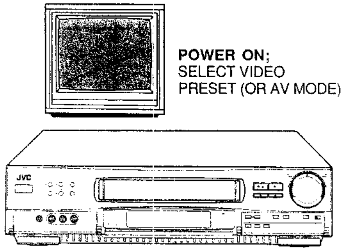
- *If the day and month data is invalid (such as 31st April), the month digits are cleared automatically and the day digits will blink. Input again.*
- *If the year digits are automatically cleared in step 4, it is possible that you have input 29th February for a non-leap year. Input again.*
- *When the batteries are exhausted, the LCD's characters become translucent and difficult to read. Replace both batteries and set the clock again.*
- *If the recorder's clock display blinks when the TRANS button is pressed in step 5, press DISPLAY and then TRANS again.*

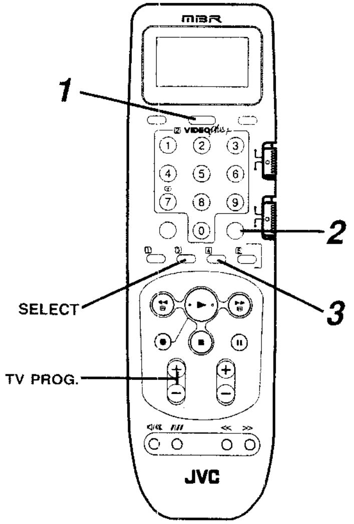
Tuning In Your Video Recorder To Local TV Stations

The procedure introduced here lets you assign receivable TV stations in your area to preset positions on your video recorder's tuner. Once stored, these can be accessed with the TV PROG. button.

ATTENTION

Please ensure that you select preset position number "1" for BBC1, "2" for BBC2, "3" for ITV, and "4" for CH4 since these are pre-set in your Video Plus+ remote control in this order.
In the display example shown, preset position 3 for ITV would be tuned to channel number 23 in the Crystal Palace area (London).
For channel numbers in your area, refer to the chart on page 35.

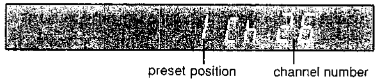




ENGAGE THE TUNING MODE

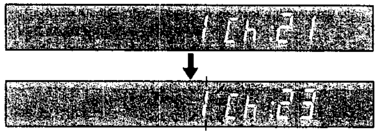
1 Press OPERATE to turn on the recorder.

2 Press CH SET.



START TUNING

3 Press CH SEARCH.
- Automatic scanning will start at the lowest station channel number, and stop when a station is detected.
- Automatic scanning will start at the lowest station channel number, and stop when a station is detected.

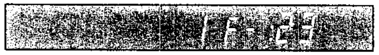


(Continued on next page.)

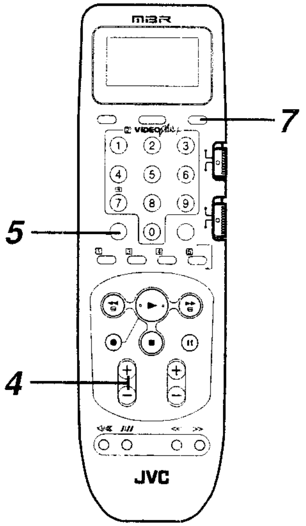
If the picture of the station detected in step 3 is not satisfactory

Try fine-tuning.

1. Press SELECT.

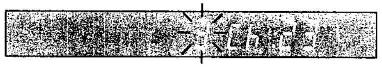


2. Press TV PROG. (+ or –) so that the picture becomes clearer.
3. Press SELECT.
4. Continue to step 4 on the next page.



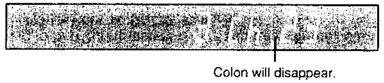
SELECT A PRESET POSITION

4 Press TV PROG. to select the tuner preset position where you wish to store that TV station.



STORE THE STATION

5 Press CANCEL to store the station.



IMPORTANT:

- *The CANCEL button is used for both storing and cancelling the channel. If the colon disappears when CANCEL is pressed, the channel has been stored.*
- *This message indicates that UHF channel 23 has been stored in the tuner's preset position 3.*

CONTINUE

6 Repeat steps 3 through 5 for other TV stations.

CANCEL THE TUNING MODE

7 Press DISPLAY.

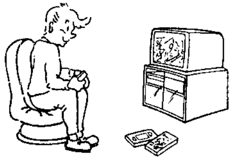
To change preset stations, ☞ p.34

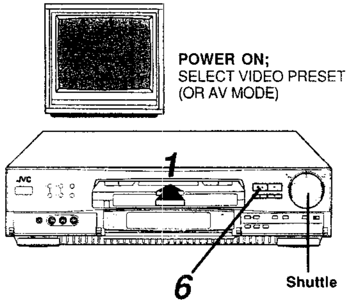
NOTE:

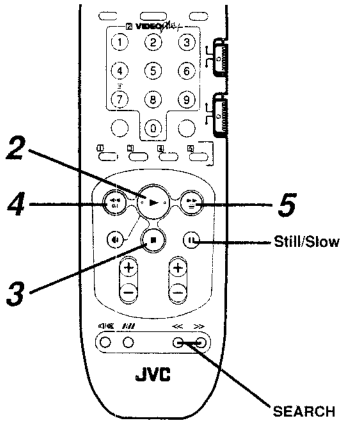
- *If you want to return to a lower channel number after skipping it by mistake in Step 3, hold down CH SEARCH to start reverse channel search. Releasing the button stops the reverse search.*

Basic Playback

The easiest, most basic operation possible with your video recorder is tape playback. Already-recorded signals on a video tape are read by your video recorder and displayed on your TV just like a TV programme.







NOTES:

- *The recorder automatically stops when still or slow motion playback continues for more than 5 minutes.*
- *If the still picture is unstable (vertical jitter) use the TV PROG. buttons to correct the picture.*
- *During search playback, some noise bars will appear.*
- *There is no audio during search, still, frame-by-frame, or slow motion playback.*
- *The recorder automatically rewinds when the end of the tape is reached.*

LOAD A CASSETTE

1 Insert a cassette.
- The recorder power will come on automatically.
- If the safety tab on the cassette is removed, playback will start automatically.

TO START PLAYBACK

2 Press ► (Play).

TO STOP PLAYBACK

3 Press ■ (Stop).

TO REWIND OR FAST-FORWARD

4 To rewind the tape, press ◄◄ (Rewind) or turn the Shuttle to the left and release it.

5 To fast-forward the tape, press ►► (Fast Forward) or turn the Shuttle to the right and release it.

TO EJECT THE TAPE

6 Press ■/▲ (Stop/Eject) on the recorder.

Variable-Speed/High-Speed Search, Still Playback/ Frame Advance/Forward Slow Motion

During Playback or Still:

1 Press either SEARCH button for variable-speed search.
- The more times the button is pressed, the faster the playback picture will move.
- To decrease speed, press the button for the opposite direction.

During Playback:

1 Press ►► (Fast Forward) for high-speed forward search, or ◄◄ (Rewind) for high-speed reverse search.
- For short searches, keep ►► (Fast Forward) or ◄◄ (Rewind) pressed for more than 2 seconds. When released, normal playback will continue.

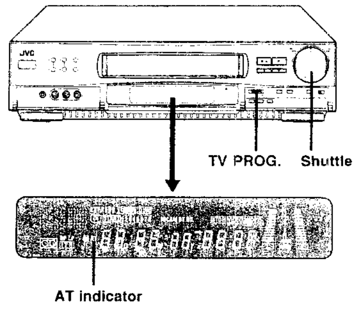
2 Press ❚❚ (Still/Slow) to view a still picture.
- Press again to advance the picture frame by frame.

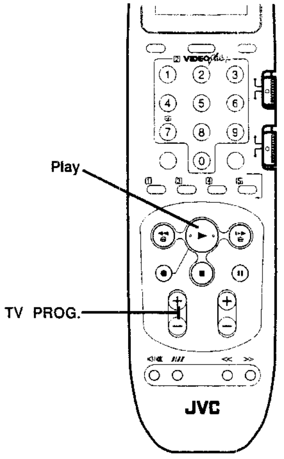
3 Press ❚❚ (Still/Slow) for 2 seconds for slow motion.
- Press again to stop the picture.

4 Press ► (Play) to resume normal playback.

Playback

Take advantage of special functions possible with the recorder's controls or the remote control.





NOTES:

- *When playing back LP recordings in the search, still, or frame-by-frame playback mode, the picture will be distorted, and there may be a loss of colour.*
- *When a new tape is inserted, the recorder enters the automatic tracking mode automatically.*

Shuttle Dial Control (Recorder)

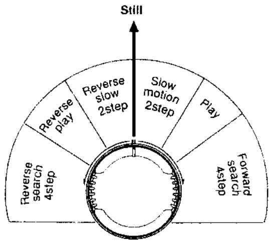
You can view pictures in slow to fast motion.

During Still or Playback:

1 Turn the Shuttle to the right for forward slow motion and search.
- Release the Shuttle for a still picture, or...
- For fast-forward with a visible picture, turn the Shuttle all the way to the right and release it within 1 second.

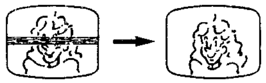
2 Turn the Shuttle to the left for reverse play and search.
- Release the Shuttle for a still picture, or...
- For rewind with a visible picture, turn the Shuttle all the way to the left and release it within 1 second.

To resume normal playback, press the Play button.



Manual Tracking (Recorder)

Your video recorder is equipped with automatic tracking control; the AT indicator lights or blinks when automatic tracking is on. During playback, tracking can be adjusted manually using the TV PROG. buttons.



During Playback:

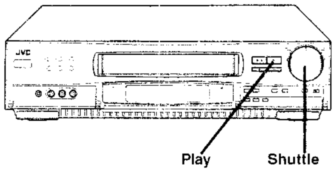
1 Press TV PROG. (∨ and ∧) simultaneously for manual override.
- The AT indicator will go out.

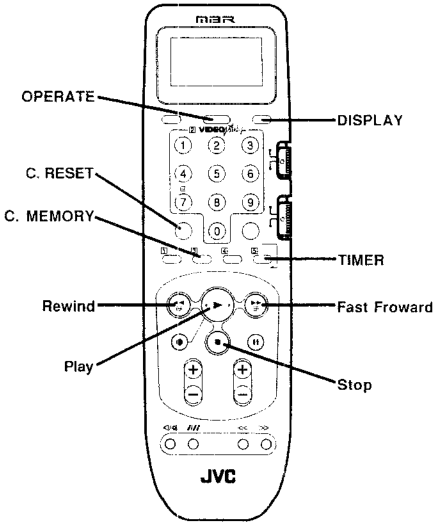
2 Press TV PROG. (∨ or ∧) to adjust tracking.

3 Press TV PROG. (∨ and ∧) simultaneously to return to automatic tracking.

To adjust tracking during slow motion, simply press TV PROG. (∨ or ∧) to obtain the best picture.

Playback (cont'd)





Open Search Function

Your video recorder lets you view the picture being rewound or fast-forwarded so you can easily check how far the tape has gone.

During Rewind:

1. Keep the remote's Rewind button pressed, or turn the Shuttle Dial fully to the left.
   - The rewinding tape's picture will be visible.
2. Release the Rewind button or Shuttle Dial to resume normal rewinding.

During Fast Forward:

1. Keep the remote's Fast Forward button pressed, or turn the Shuttle Dial fully to the right.
   - The fast forwarding tape's picture will be visible.
2. Release the Fast Forward button or Shuttle Dial to resume normal fast forwarding.

Repeat Playback (Recorder)

Your video recorder can automatically play back the whole tape 20 times repeatedly.

During Playback:

1. Press Play for more than 5 seconds, and release.
   - The Play indicator ( ) on the display panel will blink slowly.
   - The tape will be played 20 times automatically, and then stop.
2. To stop playback at any time, press STOP.

Next Function Memory (Remote Control)

During Stop:

For automatic start of playback after the tape is rewound:

1. Press ◄◄ (Rewind).
2. Press ► (Play) within 2 seconds.

For automatic power off after the tape is rewound:

1. Press ◄◄ (Rewind).
2. Press OPERATE within 2 seconds.

For automatic timer standby after the tape is rewound:

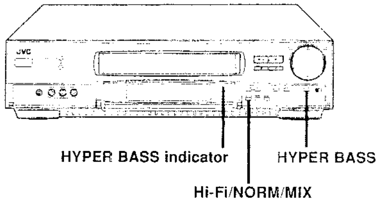
1. Press ◄◄ (Rewind).
2. Press TIMER within 2 seconds.

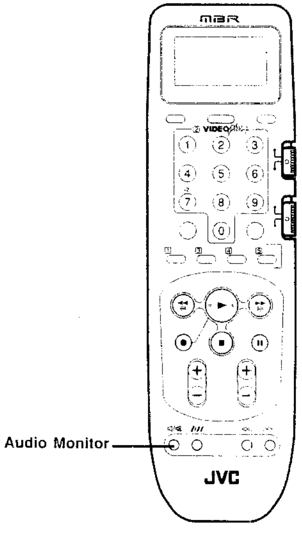
- If you want the "next function" to automatically start when the counter reads "0:00:00" (instead of at the beginning of the tape), press C. MEMORY so that the "M" mark appears before pressing ◄◄ (Rewind).

Counter Memory (Remote Control)

During Playback:

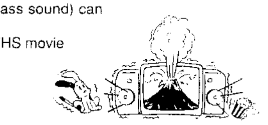
1. Press DISPLAY until a counter reading appears on the display pannel.
2. Press C. RESET at a point you wish to locate later.
   - The counter will read "0: 00: 00".
3. Press C. MEMORY.
   - "M" will appear in front of the counter digits.
4. When you wish to return to that point, press ■ (Stop) and then press ◄◄ (Rewind).
   - The tape will rewind and stop at about "0: 00: 00" automatically.
5. To cancel the Counter Memory mode, press C. MEMORY again.





Hyper-Bass Sound (Recorder)

Lower frequencies (bass sound) can be boosted instantly.
You can make Hi-Fi VHS movie software, etc. sound more dynamic.



During Playback:

1. Press the HYPER BASS button on the recorder. The HYPER BASS indicator will light.
2. To turn Hyper-Bass off, press HYPER BASS again.

Soundtrack Selection

Your video recorder is capable of recording three soundtracks (HIFI L, HIFI R and NORM) simultaneously, and playing back the selected soundtrack.

During Playback:

- Pressing Audio Monitor on the remote control changes the track:

Track: (on display panel)	Use:
L+R	for Hi-Fi stereo tapes.
L	for main audio of bilingual tapes.
R	for sub audio of bilingual tapes.

- Pressing Hi-Fi/NORM/MIX on the recorder changes the mode:

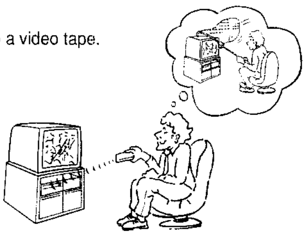
Mode:	Track: (on display panel)	Use:
HIFI	L and/or R	for Hi-Fi stereo tapes.
NORM	NORM	for audio-dubbed tapes.
MIX	NORM + L and/or R	for audio-dubbed tapes.

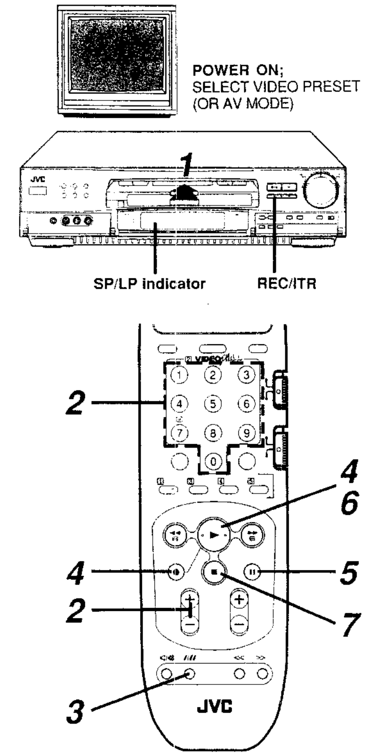
NOTES:

- *Normally use the L + R position. Then Hi-Fi stereo tapes are played back in stereo, and tapes with normal audio only are played back automatically in the NORM mode.*
- *Bilingual programmes are not transmitted in the U.K. at present.*

Basic Recording

TV signals being received by the recorder's built-in tuner can be recorded onto a video tape.
You can "capture" a TV programme using your video recorder.





LOAD A CASSETTE

1 Insert a cassette with the safety tab in place.
- The recorder power will come on automatically.

CHOOSE A PROGRAMME

2 Press TV PROG. or the numeric keys to select the preset you wish to record.

SELECT THE TAPE SPEED

3 Press /// (SP/LP).
- Check the SP/LP indicator on the recorder to confirm the selected tape speed.

TO START RECORDING

4 Press ● (Record) and ► (Play) simultaneously.

TO PAUSE RECORDING

5 Press ❚❚ (Pause).

6 Press ► (Play) to resume recording.

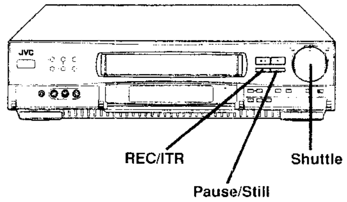
TO STOP RECORDING

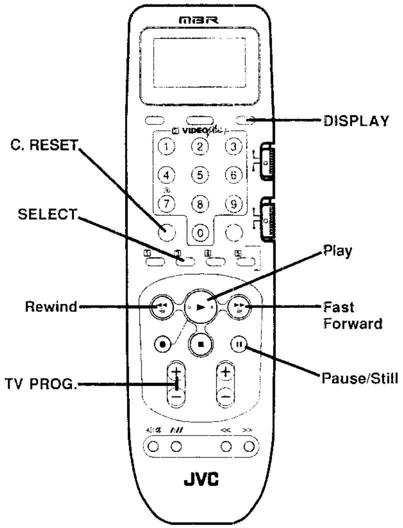
7 Press ■ (Stop).

NOTES:

- *To start recording with the recorder's REC/ITR button, press it once on its own. Pressing REC/ITR more than once activates the Instant Recording (ITR) function. ☞ p.23.*
- *After pause, when recording is resumed, a few frames recorded before the pause may be overlapped by the new recording. This is meant to reduce picture distortion and is not a malfunction.*
- *The recorder automatically stops when record-pause continues for more than 5 minutes.*
- *If the Record button does not work, check to see if the cassette's safety tab has been removed.*
- *The preset cannot be changed while recording is in progress. To change the preset, engage the record-pause mode, then change the preset.*
- *The recorder automatically rewinds when the end of the tape is reached during recording.*
- *The recorder automatically places an index code on the tape every time recording begins. For information on the Index Search function, ☞ p. 42.*

Recording





Instant Recording (ITR)

You can start a recording and then set the recorder to shut off automatically after a set duration.

During Record:

1. Press REC/ITR. "ITR" and "0:30" indications appear, advising that power will switch off after 30 minutes.
2. Press REC/ITR again to delay the off-time by 30-minute increments (up to 4 hours).
   - For more precise setting, use the remote control's SELECT and TV PROG. buttons to set the exact time required (possible up to 8 hours and 59 minutes).

To Watch Another Programme While Recording

During Record:

1. Use the preset controls on the TV to select the other station you wish to view.
   - The programme selected with the TV's preset controls will appear on the TV screen while the one selected with the video recorder's TV PROG. buttons will be recorded on the tape.

Retake

You can cut out unwanted parts of a TV programme while you're recording it.

During Record:

1. Press Pause/Still.
2. Turn the Shuttle dial or press Rewind (or Fast Forward) for search in the corresponding direction.
   - Release to return to Record-Pause mode.
3. Press Play when you wish to resume recording.

Elapsed Recording Time Indication

When you need to know the exact time of a recording.

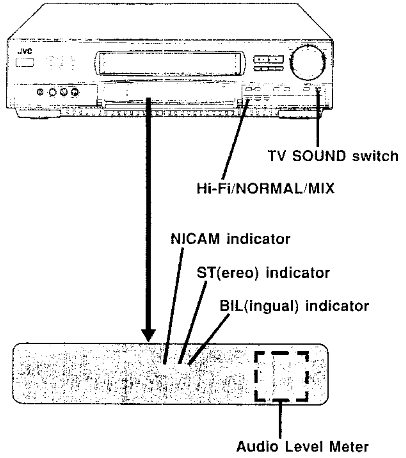
1. Press DISPLAY until a counter reading appears on the display panel.
2. Press C.RESET before starting recording or playback.
   - The counter will be reset to "0:00:00" and show the exact elapsed time as the tape runs.

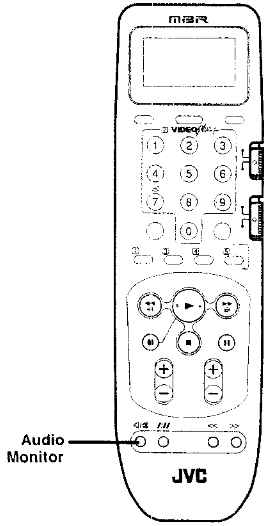
Display Button

When you wish to check the remaining tape time, clock time, date, or counter reading.

1. Press DISPLAY to display the remaining tape time.
2. Press DISPLAY again to display the current clock time.
3. Press DISPLAY again to display the current date.
4. Press DISPLAY again to display the counter reading.

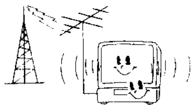
Recording (cont'd)





Receiving NICAM Stereo And Bilingual Programmes

Your recorder is equipped with a Digital stereo sound decoder for reception of NICAM stereo and bilingual broadcasts.



- When a stereo programme is being received, the NICAM and ST(ereo) indicators light.
- When a bilingual programme is being received, the NICAM and BIL(ingual) indicators light.
- When a monoaural programme is being received, the NICAM indicator lights.

To Record NICAM Stereo And Bilingual Programmes

When the TV SOUND switch is set to AUTO:

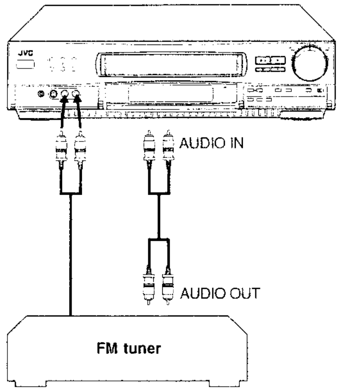
- If the NICAM audio programme corresponds to the TV picture, the NICAM audio programme will be recorded on the Hi-Fi audio track, and the Standard audio programme on the normal audio track.
- If the NICAM audio programme doesn't correspond to the TV picture, the Standard audio programme will be recorded on both the Hi-Fi and normal audio tracks.

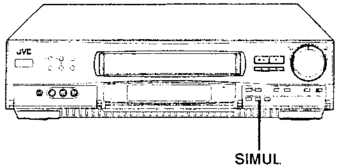
When the TV SOUND switch is set to NICAM:

- The NICAM audio programme will be recorded on the Hi-Fi audio track, and the Standard audio programme on the normal audio track.
- To listen to a stereo programme, select "HIFI L+R" by pressing Audio Monitor.
- To listen to a bilingual programme, select either "HIFI L" or "HIFI R" as required.
- To listen to the Standard audio programme, select "NORM" using the Hi-Fi/NORMAL/MIX button on the recorder.

NOTE:

- *Bilingual programmes are not transmitted in the U.K. at present.*





Simulcast Recording

Your recorder lets you record an audio programme while recording a TV programme. In the Simulcast mode, the TV soundtrack is recorded on the normal audio track and the external audio programme is recorded on the Hi-Fi audio track, so you can have two independent programmes. If FM simulcast TV programmes are available, record the TV programme and its FM-broadcast soundtrack simultaneously.

PREPARATION

1. Connect the FM tuner to the rear panel AUDIO IN or front panel A (Audio) connectors.
   - Front panel connections have priority.
2. Set the FM tuner to the desired broadcast.

PROCEDURE

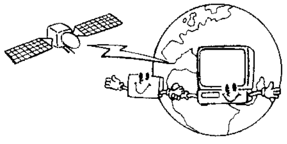
1. Select the TV programme you wish to record.
2. Press SIMUL. The SIMULCAST mode will be engaged.
   - "SC" will appear on the display panel.
3. Start recording.

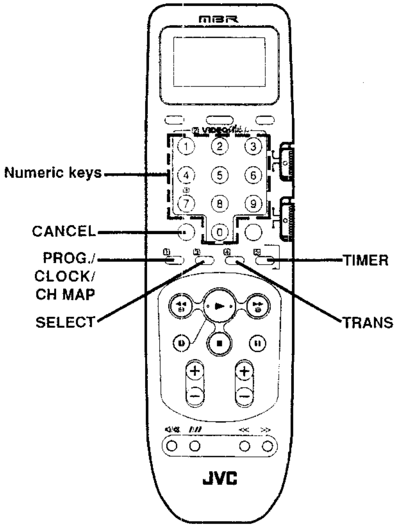
NOTES:

- If you stop recording with the PAUSE/STILL button to avoid unwanted TV programme material, the audio programme is also cut.
- After finishing simulcast recording, be sure to press the SIMUL button to cancel the Simulcast mode, otherwise it is not possible to record on the Hi-Fi track from the built-in tuner.

Information On Video Plus+

With Video Plus+, timer programming is greatly simplified because each TV programme has a corresponding code number which your recorder and remote control are able to recognise. The following information will help you maximise the benefits of this feature, especially if your AV system has cable or satellite capabilities.





Video Plus+ Operation Buttons

PROG./CLOCK/CH MAP button
- If the clock has not been set, press once to set the clock.
- If the clock has already been set, each press rotates the display: Video Plus+ Timer Program → LCD Timer Program → Clock Set mode → Channel Map mode

Numeric keys
- Press to enter a PlusCode number.

SELECT button
- After entering a PlusCode, press to check or correct the entered data.
- While the remote control is in the Channel Map mode, press to set the GUIDE PROG. and TV PROG. numbers.
- While the remote control is in the Channel Map mode, press to check the entered channel numbers.

TRANS button
- Press to transfer the data to the recorder.

TIMER button
- Press to engage the recorder's timer mode

CANCEL button
- If you have entered the wrong PlusCode number, press to backspace.
- While the remote control is in the Channel Map mode, press to cancel the entered channel numbers.

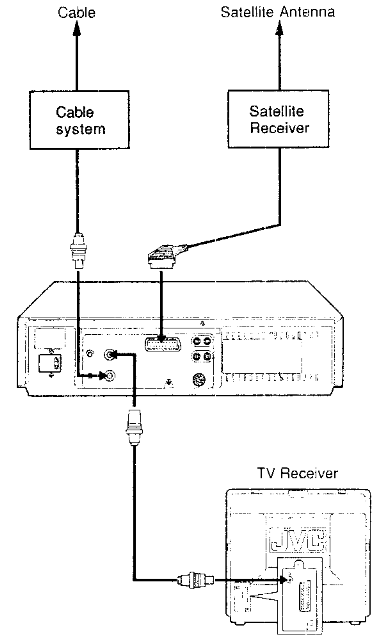
NOTES:

- ***CH MAP:*** *To use Video Plus+, it is necessary to let the remote control know both the preset position numbers for local TV stations you have set on your video recorder, and the GUIDE PROG. numbers for those TV stations. The "list" of presets and GUIDE PROG. numbers created in the remote control's internal memory is called the "Channel Map" (CH MAP).*
- ***GUIDE PROG.:*** *The assigned TV station numbers, according to broadcast area, for Video Plus+ timer-recording. The GUIDE PROG. numbers 1 through 4 are for BBC1, BBC2, ITV and CH4 respectively. For other TV stations, refer to your TV directory.*

TIMER PROGRAMMES ARE ALSO POSSIBLE FROM A SATELLITE RECEIVER AND/OR A CABLE SYSTEM.

PLEASE ENTER THE PRESET POSITIONS YOU HAVE CHOSEN FOR THESE SYSTEMS IN YOUR VIDEOPLUS REMOTE CONTROL.

IN THE EXAMPLE SHOWN, THE SATELLITE RECEIVER IS SHOWN CONNECTED TO THE "AU" (SCART) CONNECTION AND THE CABLE SYSTEM CONNECTED VIA THE AERIAL SOCKET AND TUNED TO PRESET POSITION 5 ON YOUR TV.



NOTE:

- *After selecting the programme you wish to record from your cable system or satellite receiver, set the system's timer — if your cable or satellite receiver does not have a timer leave it switched on.*

To Record Satellite And Cable System Programmes

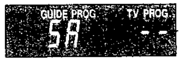
If using a satellite receiver, follow steps ①–⑥.
If using a cable system, follow steps ❶–❼.
If using both, follow all steps.

PREPARATION

①❶ Connect a cable system or a satellite receiver as illustrated.

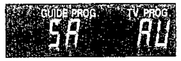
❷ Set the recorder so that cable presets can be viewed on preset position "5". (☞ p.16.)

②❸ Press CH MAP until the LCD shows the Channel Map mode.

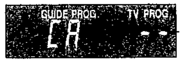


("SA" = Satellite)

③ Use the numeric keys to enter "00" for TV PROG. number.
- "AU" will appear instead of a preset number.

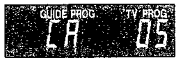


④❹ Press SELECT.

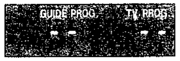


("CA" = Cable system)

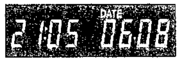
❺ Use the numeric keys to enter "05" for TV PROG. number.



⑤❻ Press SELECT.



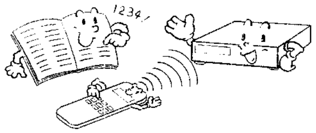
⑥❼ Press CH MAP.
- The LCD will return to the clock display.



OPERATION

1. Turn on the cable system or satellite receiver, and select the preset you wish to record.
2. Enter the PlusCode number in the same way as shown in steps 1 – 8 of "Video Plus+ Timer-Recording" on p.28 – 29.

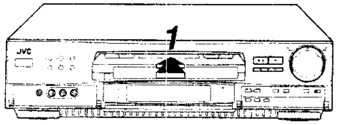
Video Plus+ Timer Recording

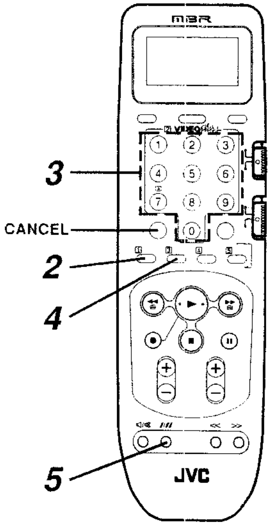


Your video recorder provides a variety of timer programming methods, including Video Plus+. The built-in Video Plus+ programming system greatly simplifies timer programming because you won't have to enter all the data that is usually necessary (such as date, start and stop time, and channel). Simply key-in the PlusCode number for the TV programme you wish to record (listed in most TV directories) and then transfer it to the recorder. Other timer programming methods available are Express Timer (☞ p.30) and the Remote Control's LCD Record Timer (☞ p.32). TIMER PROGRAMMING IS NOT POSSIBLE UNLESS THE CLOCK HAS BEEN SET. (☞ p.14)

IMPORTANT

In "Tuning In Your Video Recorder To Local TV Station" (☞ p.16), make sure you have selected preset positions 1 through 4 for BBC1, BBC2, ITV and CH4 respectively.





LOAD A CASSETTE

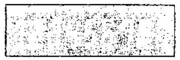
1 Insert a cassette with the safety tab in place.
- The recorder power will come on automatically.

ACTIVATE THE VIDEO PLUS+ MODE

2 Press PROG.

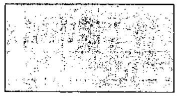
INPUT THE TV PROGRAMME'S CODE NUMBER

3 Press the appropriate numeric keys to enter the PlusCode number for the TV programme you wish to record.
- For PlusCode numbers, refer to your newspaper or TV directory.
- The length (number of digits) of the code number differs by programme.
- If you made a mistake, press CANCEL to backspace and re-enter the correct PlusCode number.



CHECK IF DATA IS CORRECT

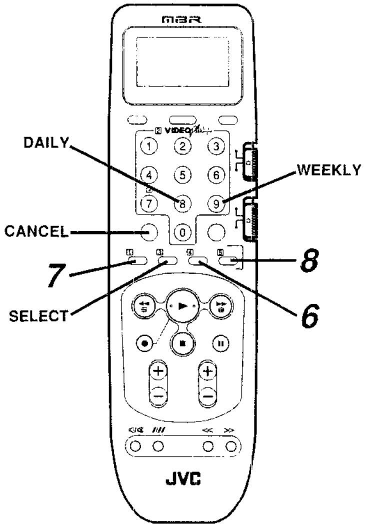
4 Press SELECT.
- The LCD will show the data for the PlusCode number you just entered.
- If the data is not correct, press PROG twice and re-enter the correct PlusCode number.
- If the entered PlusCode number is not proper, "Error" appears on the LCD. Check the PlusCode number again and re-enter it.
- If a PDC adapter is connected to the recorder, you should leave ⊡on so you can take advantage of PDC recording (☞ p.34). If you wish to cancel PDC, press ⊡(the numeric key "7").



SELECT THE TAPE SPEED

5 Press /// (SP/LP).

(Continued on next page.)



TO DISENGAGE THE TIMER

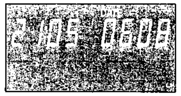
For safety, your recorder disables all other functions while in the timer mode.
- To use your recorder, first disengage the timer mode by pressing TIMER again. Now all functions will be operable.
- To re-engage the timer, press TIMER.

TRANSFER TO THE RECORDER

6 Press TRANS with the remote control directed toward the recorder's Remote Sensor window.
- Transfered program will appear on the display panel, telling you that the data has been successfully transferred to the recorder's memory.

END PROGRAMMING

7 Press PROG.
- The LCD returns to the clock display and the entered data will be automatically cleared.
- If you need to set another program, repeat steps 2 – 7.



SET TO TIMER MODE

8 Press TIMER.
- The recorder will enter the timer mode and power will go off.

To Timer-Record Weekly Serials

This function lets you set the recorder to timer-record at the same time on the same day every week.
- After pressing SELECT in step 4, press WEEKLY (the numeric key "9").

To Timer-Record Daily Serials

This function lets you set the recorder to timer-record at the same time every day.
- After pressing SELECT in step 4, press DAILY (the numeric key "8").

To timer-record CATV or Satellite TV programmes, ☞ p.27
To cancel a program from the recorder's memory ☞ p.34
Any questions? ☞ p.26 – 27, 35

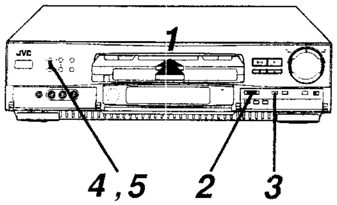
To Alter Video Plus+ Recording Time

The PlusCode numbers tell your video the start and stop time of each television programme as listed in your TV directory. Sometimes a programme is delayed or starts slightly earlier than the advertised time. The Video Plus+ system lets you alter both start and stop times to allow for anticipated schedule changes.

- Enter the PlusCode number (Step 3 – 4).
- Press the SELECT button until the item you wish to change "blinks" on the LCD.
- Use the numeric keys to enter the new time.
  For example, the stop time is 21:00, and you wish to change it to 21:05. Press the SELECT button 6 times. The stop time minutes will blink. Now, use the numeric keys to enter "05".
  Note: To alter any other start or stop time item, press SELECT the required number of times again, and use the numeric keys to enter the new time.
- Press TRANS when all changes have been made. This will enter the programme corrections into the video memory.

Express Timer Recording

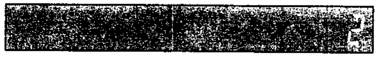
The "Express Timer" introduced here is a quick, "shortcut" method of directly programming your video recorder's timer. TV shows to be broadcast within 24 hours can be programmed for automatic recording simply by pressing three buttons (conveniently numbered) on your recorder's control panel. It's a quick and easy way to program the timer for same-day or next-morning recording. For LCD timer programming using your remote control, ☞ p.32. TIMER PROGRAMMING IS NOT POSSIBLE UNLESS THE CLOCK HAS BEEN SET.



Express Timer Programming

LOAD A CASSETTE

1 Insert a cassette with the safety tab in place.
- The recorder power will come on automatically.
- The recorder's display panel will show the preset number of the station being received.

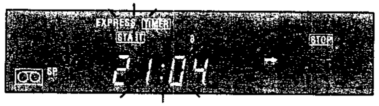


2 If you want to record another station, press TV PROG. ∨/∧ to change the number.

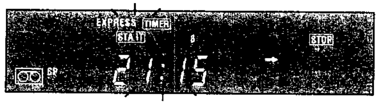
3 If you want to change the tape speed, press SP/LP.

SET THE START TIME

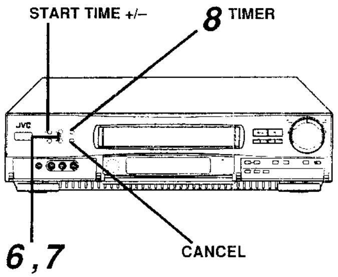
4 Press START TIME +.
- This engages the programme set mode, and the current time will appear.



5 Press START TIME +/– to set the start time.
- START TIME + advances the time and START TIME – reverses the time.
- Press briefly to change by 1 minute. Hold the button down to change by 30-minute increments.



- After the start time is set, the date and preset will be displayed for 3 seconds.



TO DISENGAGE THE TIMER

For safety, your recorder disables all other functions while in the timer mode.
- To use your recorder, first disengage the timer mode by pressing TIMER again. Now all functions will be operable.
- To re-engage the timer, press TIMER.

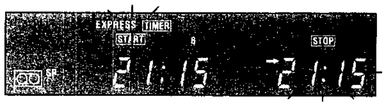
TO CHECK PROGRAMMED SETTINGS

While in the timer mode, press START TIME + to check the settings you have programmed into the Express Timer. Each time START TIME + is pressed, the display will change: Start Time, Stop Time, Date, Preset, Tape Speed and "TIMER" again. DO NOT press START TIME + while the timer mode is disengaged because this will clear the Express Timer's memory to make room for a new entry.

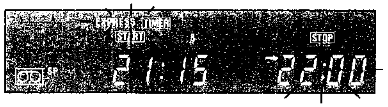
For other timer programming methods, ☞ p.32.
Any questions? ☞ p.35.

SET THE STOP TIME

6 Press STOP TIME +.
- The start time will be transferred over to the stop time position automatically.



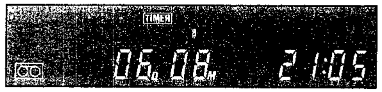
7 Press STOP TIME +/– to set the stop time.
- STOP TIME + advances the time and STOP TIME – reverses the time.
- Press briefly to change by 1 minute. Hold the button down to change by 30-minute increments.



- If a PDC adapter is connected to the recorder, you should leave ⊡ on so you can take advantage of PDC recording (☞ p.34). If you wish to cancel PDC, press ⊡ (the numeric key "7").

SET TO TIMER MODE

8 Press TIMER.
- The recorder will enter the timer mode and power will go off.



TO CHANGE THE TAPE SPEED

If needed, you can change the tape speed at any time during steps 4 – 7.

TO CANCEL THE PROGRAM

While timer programming, press CANCEL.
- Pressing CANCEL again disengages the Express Timer Program mode.

or...

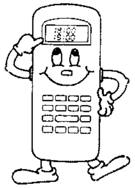
While in the Timer mode, first press TIMER to disengage the Timer mode, and press START TIME+. Then press CANCEL twice.

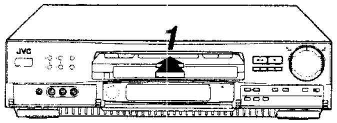
ATTENTION:

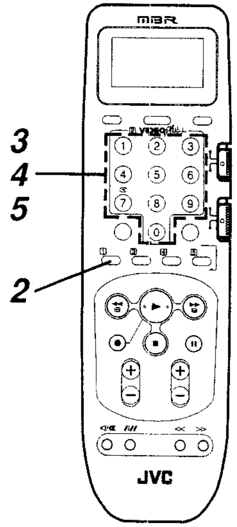
- If you have programmed the timer's Program 8 (via the on-screen programming facility that is available when an optional VPT (teletext) adapter is connected (☞ p.43), using the Express Timer will clear that data from Program 8 and replace it with the Express Timer data.

Remote Control's LCD Record Timer

The remote control's LCD programming method introduced here lets you input all necessary settings manually. It's helpful if the PlusCode for the TV programme you want isn't readily available. TIMER PROGRAMMING IS NOT POSSIBLE UNLESS THE CLOCK HAS BEEN SET.





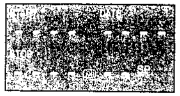


LOAD A CASSETTE

1 Insert a cassette with the safety tab in place.
- The recorder power will come on automatically.

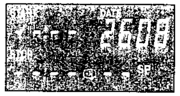
ACCESS THE LCD TIMER PROGRAM

2 Press PROG. twice.



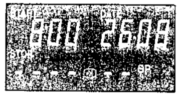
INPUT THE DATE

3 Press the appropriate numeric keys.
- Example: For 26th August, press 2 6 0 8.



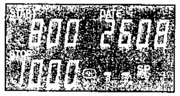
INPUT THE START TIME

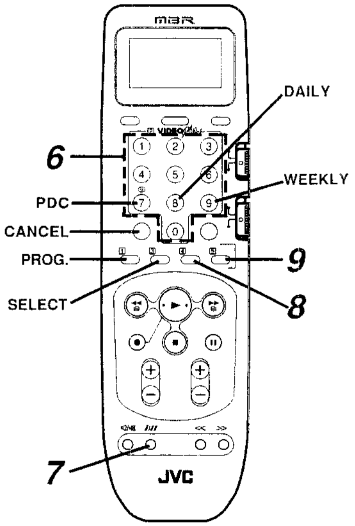
4 Press the appropriate numeric keys.
- Example: For 8:00, press 0 8 0 0.



INPUT THE STOP TIME

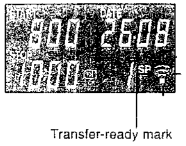
5 Press the appropriate numeric keys.
- Example: For 10:00, press 1 0 0 0.





INPUT THE PRESET NUMBER

6 Press the appropriate numeric keys.
- Example: Press "1" for BBC 1, if BBC 1 has been stored in preset position 1 during tuning.
- After the preset has been entered, the transfer-ready mark will appear and blink.
- If a PDC adapter is connected to the recorder, you should leave ⊡ on so you can take advantage of PDC recording (☞ p.34). If you wish to cancel PDC, press ⊡ (the numeric key "7").



SELECT THE TAPE SPEED

7 Press /// (SP/LP) to select the tape speed.

TRANSFER THE DATA TO THE RECORDER

8 Press TRANS with the remote control directed to the recorder's Remote Sensor window.
- You will see the program number on the display panel, telling you that the data has been successfully transferred to the recorder's memory.

SET TO TIMER MODE

9 Press TIMER.
- The recorder will enter the timer mode and power will go off.
- If you wish to disengage the timer mode, press TIMER again.
- Press PROG. to cancel LCD Timer Program mode.

Variations in Step 3 (Weekly Program)

This function lets you set the recorder to timer-record at the same time on the same day every week. Use it to record weekly serials.
- First press numeric key "9" (WEEKLY) and then enter the date.

Variations in Step 3 (Daily Program)

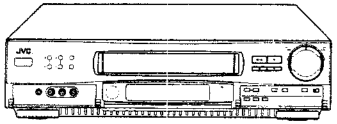
This function lets you set the recorder to timer-record at the same time every day. Use it to record daily serials.
- To record a daily serial starting on the day of setting, press numeric key "8" (DAILY) and then press SELECT until the display changes to time input mode.
- To record a daily serial starting on a certain day, press numeric key "8" (DAILY) and then enter the date.

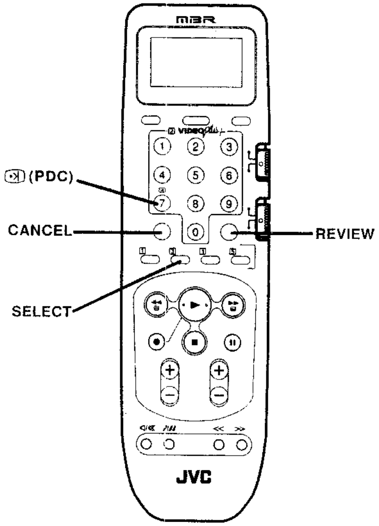
TO MAKE CORRECTIONS

- During steps 3 and 6, press CANCEL to backspace and input new data.
- After setting the channel in step 6, press SELECT to make the item you want to change blink, and input new data.
- Pressing PROG. clears the programmed data.

To cancel a program from the recorder's memory, ☞ p.34.
Any questions? ☞ p.35.

Other Timer-Recording Information





On Checking And Cancelling Programs

Since executed programs are automatically cleared from memory (except those for daily and weekly serials), cases where the entire 8-event memory is full should be rare. If this should happen, check the preset programs and cancel one or more to make room for the new program(s) you wish to input.

TO CANCEL A PROGRAM

1. Press REVIEW until the program settings are displayed.
    - Program 1 is displayed with the number blinking.
2. Press SELECT to review the program contents in succession.
3. Press CANCEL to erase the program from memory.
    - You can press CANCEL at any stage while the program is open. The erased program number will be displayed with the number blinking.
    - To erase another program, press REVIEW when a blinking program number is displayed.

Some Facts On Timer Operation

- When timer-recording is successfully completed, the recorder's power is automatically switched off.
- Since the timer starts and stops recording based on the time being kept by your video recorder's built-in clock, the clock's time must be accurate for correct timer-recording results.

PDC Recording (Optional Adapter Required)

Now available from some TV stations, PDC (Program Delivery Control) is a service designed to assure safe, accurate timer-recording. With this system, special code signals are transmitted together with the audio/video signals. These code signals control your video recorder and have precedence over advertised times you preset in the timer. This means that your recorder will start and stop recording when the preset TV programmes actually start and end — even if the broadcast time of a preset TV programme is changed.

TO USE PDC SERVICE

- Connect JVC's optionally available PDC adapter to the PDC/VPT connector of the recorder.
- You do not have to cancel "PDC" even for non-PDC programmes, because those programmes will be recorded at the preset times.
- If you wish to cancel "PDC", press the ⊙ button (the numeric key "7"). Pressing the ⊙ button alternates the setting.
- During Video Plus+ programming, the " ⊙ " mark on the remote's LCD means "PDC ON." To cancel PDC, press the ⊙ button (the numeric key "7") before transferring the programme data to the recorder.

NOTE (PDC Recording):

- *When you manually enter programmes (i.e. not using Video Plus+), set the start time exactly as advertised in the TV listing. A different time than advertised will result in no recording.*

Error Indications

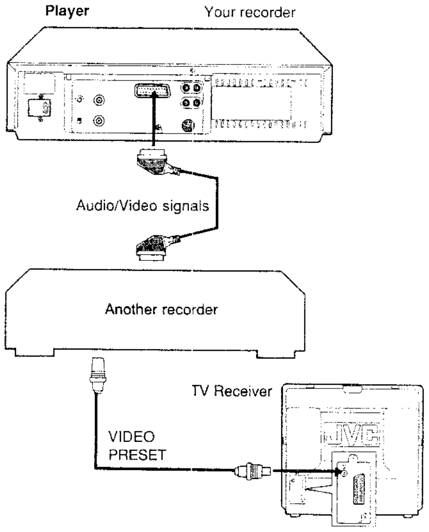
The following error indications may appear on the recorder when you press the TIMER button to engage the timer mode. Here's why, and what you should do.

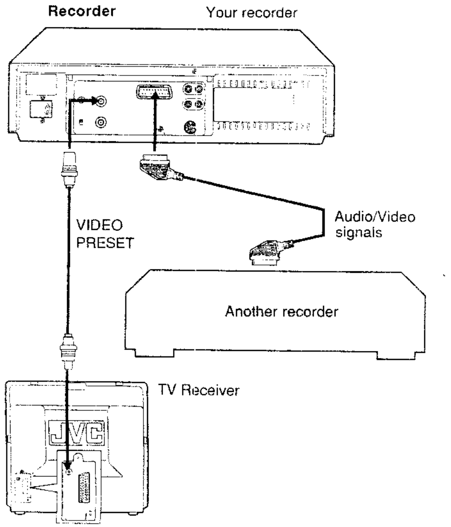
INDICATION	WHY	WHAT TO DO
"TIMER" and "📼" on the display panel continue blinking.	There is no cassette in the recorder.	Insert a cassette.
The cassette is automatically ejected. "TIMER" and "📼" continue blinking.	The inserted cassette has its safety tab removed.	Insert a cassette with its safety tab intact. Or cover the safety tab hole of the cassette with adhesive tape and re-insert it. ☞p.10.
"TIMER" blinks for 10 seconds and the timer mode is cancelled.	There are no preset programs in memory, or they have all been incorrectly preset.	Check the programmed data and re-program it as necessary. Press TIMER again.

Other Indications

INDICATION	WHY
"TIMER" steady lit (with clock display).	The recorder is in the timer mode. This is the normal display you should see when you press the TIMER button.
"○" and "TIMER" steady lit.	Normal display while timer-recording is in progress.
The cassette is ejected, power is shut off and "TIMER" and "📼" are blinking.	This means that the end of the tape was reached while timer-recording was in progress. Therefore, the preset program may not be recorded in its entirety.
"0:00" is blinking.	This means the clock must be set. It's displayed when time-keeping is terminated due to a power failure or because the recorder's power plug was pulled from the AC outlet. To set the clock. ☞ p.14. If power was interrupted, it's also likely that all preset timer programming data has been erased. Please check and re-program as necessary.
"-- -- -- -- --" is displayed for about 5 seconds when the TRANS button is pressed.	Data was not successfully transferred. The program may have been incorrectly preset, or the recorder's clock has not been set, or all the recorder's timer programs (1 – 7) are preset. Check the LCD program, and re-program as necessary. Transfer the correct data. Or cancel unnecessary programs, and transfer again.

Editing


Player
Your recorder
Audio/Video signals
Another recorder
TV Receiver
VIDEO
PRESET


Recorder
Your recorder
VIDEO
PRESET
Audio/Video
signals
Another recorder
TV Receiver

Editing To/From Another Video Recorder

Your video recorder can be used as either the recording deck or the source player when editing tapes.

PREPARATION

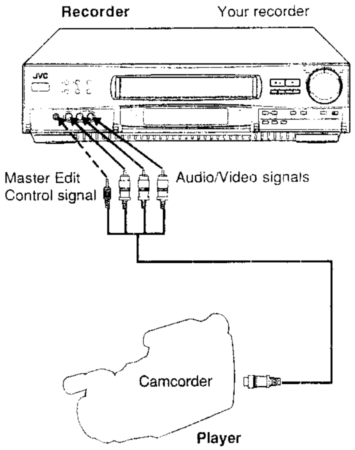
1. Connect the player's AUDIO/VIDEO connector to the recorder's AUDIO/VIDEO connector.

OPERATION

2. Select the recorder's external input mode.
   - With this recorder, press the numeric key "0". "AU" will appear instead of a preset number.
3. Put the player in the Play mode.
4. Put the recorder in the Record mode.

NOTE:

- *Suitable leads can be obtained from your dealer.*


Recorder
Your recorder
Master Edit
Control signal
Audio/Video signals
Camcorder
Player

Editing From A Camcorder

Tape-to-tape editing is also possible using a camcorder (equipped with playback facility) as the player and your deck as the recorder.

PREPARATION

1. Connect the camcorder's AV OUT connector to the recorder's AUDIO/VIDEO connector.

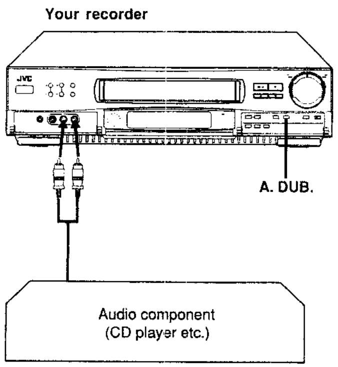
OPERATION

2. Select the recorder's external input mode by pressing numeric key "0". "F-AU" will appear instead of a preset number.
3. Put the camcorder in the Play mode.
4. Put the recorder in the Record mode.

NOTES:

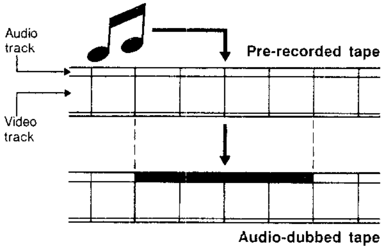
- *If the JVC camcorder is equipped with the Master Edit Control system, you can control the recorder using the camcorder's controls. See the camcorder's instruction manual for operating procedures.*
- *Connections made to the front panel Video and Audio input automatically override the rear panel AUDIO/VIDEO input connection.*

Editing (cont'd)



Audio Dubbing

Audio dubbing replaces the audio sound of a previously recorded tape with a new soundtrack.



Connect an audio component to the recorder's front panel AUDIO input connector. Then ...

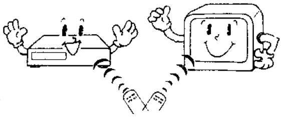
1. Select the recorder's external input mode by pressing numeric key "0". "F-AU" will appear instead of a preset number.
2. Start playback and engage the Still mode at the point from which you wish to start audio dubbing.
3. Press A. DUB.
4. Start playback of the audio source, and then press PLAY.
   - Audio dubbing will start.
5. Press PAUSE/STILL to stop audio dubbing temporarily.
6. Press STOP to stop audio dubbing.

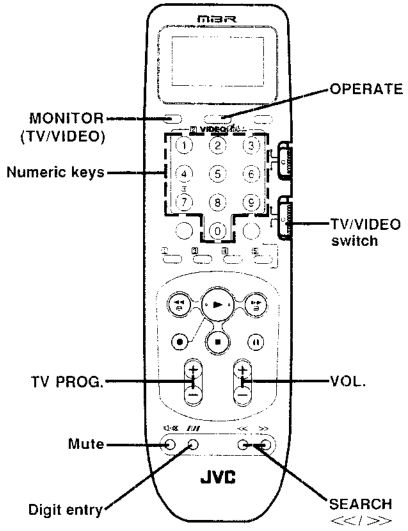
NOTES:

- *When monitoring the sound during Audio Dubbing, the normal soundtrack will be automatically selected. If you wish to hear the mixed sound (Hi-Fi + normal soundtracks), press the Hi-Fi/NORM/MIX button to select the MIX mode. ☞ p. 21*
- *Audio dubbing will stop automatically at the counter reading of "0:00:00", and the recorder will enter the Play mode. Check the counter before starting audio dubbing.*
- *Connections made to the front panel Video and Audio input automatically override the rear panel AUDIO/VIDEO input connection.*
- *Audio dubbing is not possible with cassettes whose safety tab has been removed.*

Using The Remote Control For TV Operation

The provided remote control can operate the basic functions of your television. In addition to JVC televisions, other manufacturers' televisions listed here can also be controlled by setting the remote control to the corresponding TV code. The remote control's default code is "1", which enables control of most JVC televisions.





CODE	TV BRAND NAME
1	JVC
2	BRANDT, NORDMENDE, SABA, TELEAVIA, TELEFUNKEN, THOMSON
3	FERGUSON
4	PHILIPS
5	BLAUPUNKT, GRUNDIG
6	SONY
7	PANASONIC
0	GRAETZ, ITT, LUXOR, SALORA, SELECO

IMPORTANT

Although the provided remote control unit is compatible with JVC televisions, as well as many TV models manufactured by others, it is possible that the provided remote control will not work with your TV, or in some instances, will have limited function capability.

TV Code Setting

Your remote control can operate the basic functions of your TV set. In addition to JVC televisions, other manufacturers' televisions listed on the left can also be controlled by setting the remote control to "TV". If your television is a JVC (Code 1), you don't have to set the TV code in step 2.

1. Set the TV/VIDEO switch to "TV".
2. While holding down the OPERATE button, press the numeric keys corresponding to the code number for your TV's brand.
   - Press OPERATE to turn the TV power on.
   - Press MONITOR (TV/VIDEO) to set the TV for TV or VIDEO (or AV) mode.
   - Press TV PROG. to select the TV's preset.
   - Press VOL. to adjust the TV's sound volume.
   - Press Mute to mute the TV's sound.
3. To operate your recorder, set the TV/VIDEO switch back to "VIDEO".

NOTES:

- The TV PROG. button does not function with televisions using Code 2.
- The MONITOR (TV/VIDEO) button does not function with televisions using Code 3.
- With some televisions, the OPERATE button functions only to turn the TV power off, and the MONITOR (TV/VIDEO) button functions only to switch the TV to the VIDEO (AV) mode.
- Whenever you replace batteries in the remote control, it is necessary to re-set the TV code if your television is not a JVC TV.

To Control Your Television With Additional Buttons

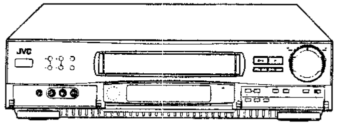
The numeric keys can also be used to select the TV's channel by setting the remote control to the TV mode.

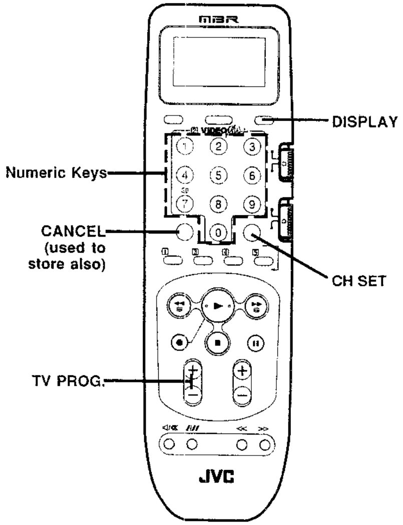
1. Set the TV/VIDEO switch to "TV".
2. Use the numeric keys and the Digit entry button or the SEARCH <</>> buttons to select the TV's channel.
   - With televisions using Code 1, 3, 4, 6, or 7 the Digit entry button corresponds to the 1-digit/2-digit entry switching button (often labelled -/--) of your TV's remote control.
   - With televisions using Code 1, 5 or 0, the SEARCH >> button corresponds to the 10 + button, and the SEARCH << button, to the 20 + button of your TV's remote control.

NOTE:

- The way these buttons are used is determined by your TV. Use these buttons as instructed for your TV's remote control.

Station Presetting





Changing Preset TV Stations

TO CHECK STORED TV STATIONS

Use the remote control. First turn on the recorder. If there is a cassette loaded in the recorder, eject it.

1 Press TV PROG. to select the preset position of the stored TV station whose number you want to know.

2 Press CH. SET.

- This indicates that preset position 1 stores the TV station on channel 26.

3 To check other preset positions, press TV PROG.

4 Press DISPLAY to disengage the tuning mode.

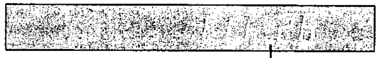
TO DELETE STORED CHANNELS

Use the remote control. First turn on the recorder.

1 Press TV PROG. to select the preset position you want to delete. (e.g. PR. 1)

2 Press CH. SET.

3 Press CANCEL.



Colon will appear.

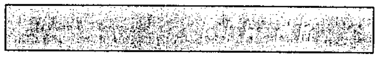
- This indicates that preset position 1 can no longer be chosen by TV PROG. buttons.

4 Press DISPLAY to disengage the tuning mode.

TO STORE NEW TV STATIONS

Use the remote control. First turn on the recorder. If there is a cassette loaded in the recorder, eject it.

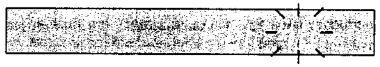
1 Press CH. SET.



2 Press CH.

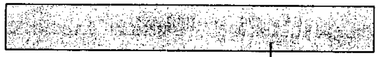
- The channel number starts blinking.

3 Press numeric keys to input the channel number you want to store. (e.g. Ch 40.)



4 Press numeric keys to input the number of a vacant preset position (e.g. 6).

5 Press CANCEL to store the channel.



Colon will disappear.

6 Press DISPLAY to disengage the tuning mode.

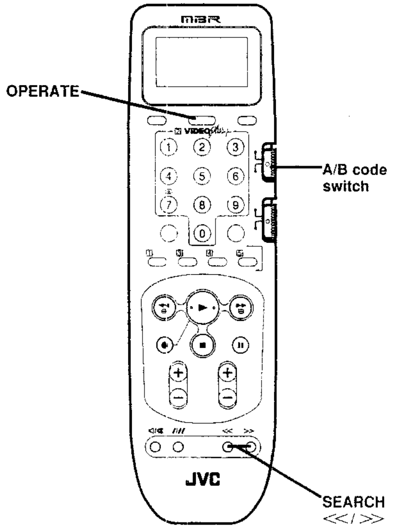
TV Station Channel Number Guide

Only the main stations are listed. There are in addition many relay stations, and full lists are available from BBC and ITC.

	BBC1	BBC2	ITV	CH4
London & South-East				
Bluebell Hill	40	46	43	65
Crystal Palace	26	33	23	30
Dover	50	56	66	53
Heathfield	49	52	64	67
Oxford	57	63	60	53
South-West				
Beacon Hill	57	63	60	53
Caradon Hill	22	28	25	32
Huntshaw Cross	55	62	59	65
Redruth	51	44	41	47
Stockland Hill	33	26	23	29
Channel Islands				
Fremont Point	51	44	41	47
South				
Hannington	39	45	42	66
Midhurst	61	55	58	68
Rowridge	31	24	27	21
West				
Mendip	58	64	61	54
East				
Sandy Heath	31	27	24	21
Sudbury	51	44	41	47
Tacolneston	62	55	59	65
Midlands				
Ridge Hill	22	28	25	32
Sutton Coldfield	46	40	43	50
The Wrekin	26	33	23	29
Waltham	58	64	61	54
North				
Belmont	22	28	25	32
Emley Moor	44	51	47	41

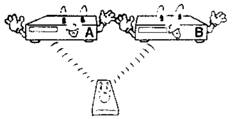
	BBC1	BBC2	ITV	CH4
North-West				
Caldbeck	30	34	28	32
Winter Hill	55	62	59	65
North-East				
Bilsdale West Moor	33	26	29	23
Chatton	39	45	49	42
Pontop Pike	58	64	61	54
Scotland				
Angus	57	63	60	53
Black Hill	40	46	43	50
Sandale	22	—	—	—
Caldbeck	—	34	28	32
Creigkelly	31	27	24	21
Darvel	33	26	23	29
Durris	22	28	25	32
Eitshal	33	26	23	29
Keelylang Hill	40	46	43	50
Knock More	33	26	23	29
Rosemarkie	39	45	49	42
Rumster Forest	31	27	24	21
Selkirk	55	62	59	65
Wales				
Blaenplwyf	31	27	24	21
Carmel	57	63	60	53
Llanddona	57	63	60	53
Moel-y-Parc	52	45	49	42
Presely	46	40	43	50
Wenvoe	44	51	41	47
Northern Ireland				
Brougher Mountain	22	28	25	32
Divis	31	27	24	21
Limavady	55	62	59	65

Other Convenient Functions



Remote A/B Code Switching

The remote control is capable of controlling two JVC video recorders independently; one set to respond to your remote control's A code control signals and another set to respond to B code control signals. The remote control is preset to send A code signals because your video recorder is initially set to respond to A code signals. You can easily modify your video recorder to respond to B code signals.



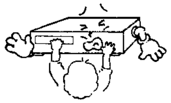
1. Unplug the recorder's power cord from the AC outlet.
2. Set the A/B CODE switch to B.
3. Plug the power cord back into the AC outlet. Do not use other remote controls at this stage.
4. Turn the recorder power on using the remote control's OPERATE button. The recorder will now only respond to B code signals.

NOTE:

- Some TV sets may malfunction in response to the B mode. If this happens switch back to the A mode.

Child Lock

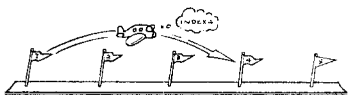
To avoid unwanted operation and prevent accidental recording...



1. Press the remote control's OPERATE button to turn the recorder's power off. Keep this button pressed for about 2 more seconds after the power LED indicator has gone off.
   - The Child Lock indicator (–) will appear on the display panel.
2. Child Lock is cancelled when you switch the recorder's power on with the remote's OPERATE button.
   - Pressing the TIMER button during timer-recording also cancels the Child Lock mode.
   - The Express Timer facility remains available even during Child Lock.

Index Search

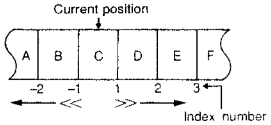
This function gives you quick access to any one of 9 index codes in either direction. Your recorder automatically marks index codes at the beginning of each recording.



During Stop:

1. Press SEARCH ≪ or ≫. "INDEX –1" or "INDEX 1" will be displayed on the display panel and search will begin in the corresponding direction.
2. If you wish to access index codes 2 through 9, press SEARCH repeatedly until the correct index number is displayed.

   Ex.: To locate the beginning of B from the current position, press SEARCH ≪ twice.
   To locate the beginning of D from the current position, press SEARCH ≫ once.



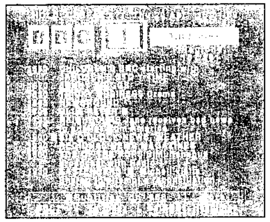
- When the specified index code is found, playback will start automatically.

With JVC's Optional Teletext Adapter

Teletext services have established themselves as one of the most flexible sources of information and broadcast schedules available to TV and video users. Your video recorder is ready to take full advantage of these services. By connecting an optional teletext adapter (☞ Specifications), you'll not only be able to view the vast number of teletext pages now available, you'll be able to transfer broadcast schedule data directly to your recorder's timer for instant, automatic timer programming. You'll also be able to make full use of your remote control's capabilities, with all the dual or triple function controls working as intended. Here are just a few examples of features available to you when you connect an optional teletext adapter.

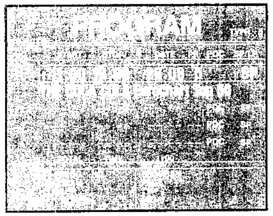
TELETEXT

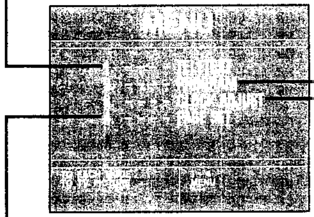
- View broadcast teletext pages.
- Several page access modes are available for quick and convenient viewing.
- Programme the timer using TV schedule pages.



PROGRAM

- Check the timer recording data on the colour display.
- Programme the timer manually with 10-key input.





PAGE SET

- Preset teletext pages so that you can quickly access your favourite or frequently-referred-to pages.
- Four pages can be preset for each of the keys, 0 to 9, totalling 40 pages.

INITIAL SET

LANGUAGE

- Select one of four languages (English, German, Italian or Swedish) for on-screen messages (no effect on teletext pages).

CLOCK ADJUST

- Set the recorder's clock manually with 10-key input.
- Automatic clock setting by reading time information from teletext pages.

Glossary

The following glossary is for your convenience in helping you better understand your VCR and its operation.

AV: Short for Audio/Video. Often refers to separate audio (sound) and video (picture) signals which, when combined, make up a program.

AV Connection: Type of VCR-to-TV connection in which the VCR's AUDIO OUT and VIDEO OUT terminals are connected to the TV's AV IN terminals. Audio and video signals are sent separately and directly to the TV without having to modulate them into RF signals.

Cassette Adapter: Provided with most Compact VHS camcorders, and also available optionally, it allows VHS-C cassettes to be played (and recorded) on VHS VCRs just like full-size VHS cassettes.

CH MAP: To use Video Plus+, it is necessary to let the remote control know both the preset position numbers for local TV stations you have set on your video recorder, and the GUIDE PROG. numbers for those TV stations. The "list" of presets and GUIDE PROG. numbers created in the remote control's internal memory is called the "Channel Map" (CH MAP).

Editing: Refers to dubbing or tape-to-tape editing (in which the contents of a tape in one video unit are copied to another tape in a second video unit), and to creative editing (in which video programming is actually modified to create something different from the original).

FDP: Short for Fluorescent Display Panel, which is the type of display panel used on this VCR.

GUIDE PROG.: The assigned TV station numbers, according to broadcast area, for Video Plus+ timer-recording. The GUIDE PROG. numbers 1 through 4 are for BBC1, BBC2, ITV and CH4 respectively. For other TV stations, refer to your TV directory.

Head: An electronic component which "writes" or "reads" video and audio signals on the tape.

Head Drum: A drum-shaped cylindrical assembly on which the video heads are located. It rotates at high speed, allowing the heads to "write" and "read" diagonal signal tracks on the video tape.

Hi-Fi VHS Stereo: High quality stereo sound recording/ playback system developed by JVC. Uses rotary FM-audio heads which scan the tape helically at high speed.

HQ (High Quality): An enhancement feature in the VCR circuitry which provides greater picture detail.

ITR: Short for Instant Timer Recording. While the VCR is recording, pressing the REC/ITR button allows you to set the VCR to automatically stop recording (and turn off) after a certain amount of time.

LCD: *Short for Liquid Crystal Display.*

Mode: The status of the VCR (the operating feature being used) at any given time. (e.g. The tape is being rewound = the VCR is in the Rewind mode.)

Nicam (Near Instantaneous Companded Audio Multiplex): System developed by the BBC and adopted in the U.K. and several other countries for stereo TV sound broadcasting.

Noise: Video noise; various types of picture distortion including pulsing, streaking, and "snow". Some types are unavoidable, such as during high-speed search, while others are the result of weak TV signals or clogged video heads.

PAL (Phase Alternate Line): The colour television broadcasting system adopted in the U.K., much of Western Europe, and many other regions. Other systems include NTSC (mainly North America) and SECAM (mainly France and Eastern Europe).

PDC (Program Delivery Control): A service designed to assure safe, accurate timer-recording by automatically compensating for changes in the broadcast schedule (such as delays and late-running programmes).

Preset Position: The "channel" numbers which are shown on the display of your video recorder, and used when choosing a station to record or timer-record. They are set during "Tuning In Your Video Recorder To Local TV Stations" procedure.

Realtime Counter: The VCR's tape counter shows tape time precisely in hours, minutes and seconds (unlike simple sequential counters). The counter resets automatically when a cassette is inserted.

RF Cable: Black insulated round cable used to connect the VCR to the TV.

RF Connection: Type of VCR-to-TV connection in which the VCR's RF (Radio Frequency) OUT terminal is connected to the TV's ANTENNA terminal. The VCR essentially "broadcasts" the program to your TV on channel 36.

Scart: A 21-pin connector used to send/receive video and audio signals between video and audio products. Also known as a Peritel connector or a Euroconnector.

Special Effects: Playback modes other than normal-speed forward playback; includes still playback (stop motion), slow motion, and high-speed visual search.

Startext: An improved page-access system for teletext, along with Fastext.

Super VHS: A version of the VHS format which was developed to provide pictures with over 400 lines of horizontal resolution. This VCR can handle standard VHS signals only, and cannot record or play back Super VHS signals.

Tape Speeds: This determines how fast the tape travels during a recording.

SP (Standard Play):
Fast tape speed. Provides recording time of about 2 hrs. per E-120 cassette, and 4 hrs. per E-240 cassette. Most prerecorded software is recorded in SP.

LP (Long Play):
Slow tape speed. Provides recording time of about 6 hrs. per E-120 cassette, and 8 hrs. per E-240 cassette. Useful for multiple-program recording on a single cassette.

Teletext: Pages of news, weather and other information which is broadcast along with the TV broadcast signal and can be accessed via a teletext adapter. The BBC's teletext service is called Ceefax, Independent Television broadcasts a service called Oracle, and Channel 4 has a service called 4-Tel. (See Startext.)

Timer-Recording: Using the VCR's built-in clock/timer for automatic, unassisted start and stop of recording.

Tracking: The video head's ability to accurately "read" recorded signals (tracks) without deviating. When tracking deviation occurs, it appears on the screen as vertical jitter and grainy streaks. The Digital Tracking function on this VCR is an extremely accurate automatic tracking system which greatly reduces the possibility of deviations.

TV PROG.: Refers to a "preset position" or the control used to select a preset position. When you set the remote control's channel numbers, the TV PROG. number for any station should be identical to the preset position number on your recorder.

UHF (Ultra High Frequency): Band of frequencies lying between 300 and 3,000 MHz. U.K. colour television broadcasts use the UHF band.

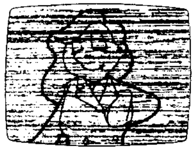
Video Plus+: A simplified system that allows timer-recording of a TV programme by simply keying-in the code number for it.

VCR: Short for Video Cassette Recorder.

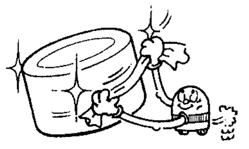
VHS: The video format of this VCR, and the video format most widely used throughout the world. VHS was developed by JVC.

Special Note On Head Cleaning

Accumulation of dirt and other particles on the video heads may cause the playback picture to become blurred or interrupted. Although this model is equipped with a built-in head cleaner which automatically cleans the heads, reducing the likelihood of dirty heads, if such troubles are encountered please consult the nearest JVC dealer.



Auto Head Cleaner



A built-in head cleaner automatically cleans the video heads and head drum whenever a tape is loaded or unloaded to reduce head clogging.

In Case Of Difficulties

POWER AND TAPE TRANSPORT PROBLEMS

Symptoms	Check points
No power is applied to the recorder.	■ Is the mains power cord disconnected? — Connect it.
Clock is functioning properly, but the recorder cannot be powered.	■ Is "TIMER" displayed on the display panel? — Press the TIMER button to turn the "TIMER" indicator off.
Tape does not run during recording.	■ Is "PAUSE" displayed on the display panel? — Press the PLAY button to turn the "PAUSE" indicator off.
Tape stops during rewind or fast-forward.	■ Is the C. MEMORY button pressed? — Press again to make "M" disappear from the display panel.
Tape will not rewind or fast-forward.	■ Is the tape already fully rewound or fast-forwarded? — Check the cassette.

RECORDING PROBLEMS

Symptoms	Check points
Recording cannot be started.	■ Is a cassette loaded? ■ Is the safety tab on the cassette removed? — Reseal the slot with adhesive tape.
TV broadcasts cannot be recorded.	■ Has "AU" been selected? — Set to the desired channel.
Tape-to-tape editing is not possible.	■ Is the camcorder or another video recorder correctly connected? ■ Are all necessary power switches turned ON? ■ Has "AU" been selected? — Set to "AU".
Camera recording is not possible.	■ Is the camcorder correctly connected? ■ Has "AU" been selected? — Set to "AU".
Timer recording is not possible.	■ Have you set the clock correctly and programmed the timer correctly? — Check once again. ■ Is "TIMER" displayed on the display panel? — If not, press the TIMER button to display "TIMER".
Video Plus+ does not timer-record properly.	■ Are recorder's preset position numbers set properly ? (☞ p.16.) ■ Are remote control's preset position numbers set properly ? (☞ p.27.)

PLAYBACK PROBLEMS

Symptoms	Check points
Playback picture does not appear while the tape is running.	■ If you are using RF OUT connection, is the TV receiver's channel selector set to the correct video channel? — Set it to the RF converter channel (UHF 36). (☞p.5) ■ If you are using AV connection, is the TV receiver set to the AV mode? — Set it to the AV mode.
Noise appears during visual search.	■ This is normal.
Noise appears during normal playback.	■ Is the automatic tracking mode engaged? — Try manual tracking. (☞p.19)
Noise appears during slow motion playback.	— Try manual tracking. (☞p.19)
Noise appears during still playback.	— Press Pause/Still a few times to remove the noise bars from the screen.
Playback picture is blurred or interrupted while TV broadcasts are clear.	■ Video heads may be dirty. — Head cleaning is necessary. Consult your JVC dealer. (☞p.45)

Hi-Fi AUDIO PROBLEMS

Symptoms	Check points
TV sound cannot be recorded on Hi-Fi audio track.	■ Has the SIMUL button been pressed? — If "SC" appears on the display panel, cancel the Simulcast mode by pressing the SIMUL button.
Breaks are noticeable in Hi-Fi audio reproduction.	■ Is the automatic tracking mode engaged? — Try manual tracking. (☞p.19)

OTHER PROBLEMS

Symptoms	Check points
Whistling or howling is heard from TV during camera recording.	■ Move camcorder or camera's microphone away from TV or reduce TV sound volume.
Remote control's LCD clock time cannot be transferred to the recorder.	■ Is "TIMER" displayed on the display panel? — Press the TIMER button to extinguish the display.
Channel cannot be switched.	■ Is recording in progress? — Press the Pause button, change the channel, and press the Play button.
Remote control does not function.	■ Are the batteries discharged? — Replace with new ones. ■ Is the A/B code switch set to the appropriate position? ■ Is the TV/VIDEO code switch set to the appropriate position? — Check once again.
The remote control's LCD characters are "hazy" and difficult to read.	— The remote control's batteries are exhausted. Replace both batteries and set the clock again.

ATTENTION:

This recorder contains microcomputers. External electronic noise or interference could cause malfunctioning. In such cases, switch the power off and unplug the power cord. Then plug it in again and switch on. Take out the cassette. After checking the cassette, operate the unit as usual.

SECTION 1
DISASSEMBLY

1.1 DISASSEMBLY

1.1.1 Top cover

1. Take out 4 screwsⒶand 1 screwⒷ.
2. To remove the top cover, slide in direction of arrow and lift away.

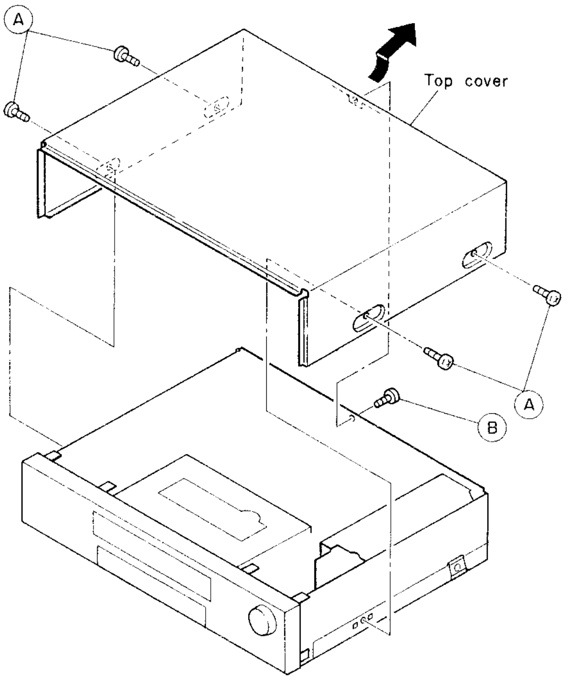

A
Top cover
A
B

Fig. 1-1-1 Top cover

1.1.2 Front panel assembly

1. Remove the top cover.
2. Carefully disengage 4 tabsⓐof the front panel assembly from the upper side of the chassis.
3. Pull the front panel assembly forward you to disengage 3 tabsⓑ of the front panel assembly from the bottom of the chassis.
4. Disconnect connector ⓒ from the SHUTTLE assembly of the front panel assembly, then remove the front panel assembly.

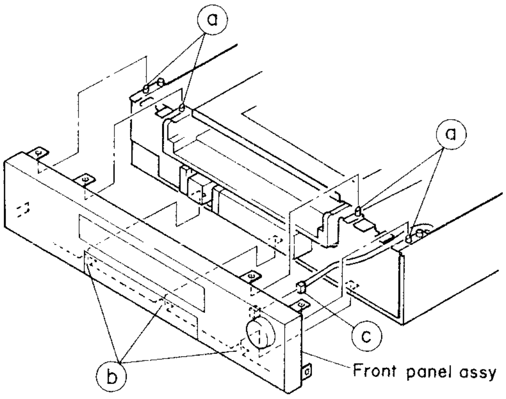

a
a
c
b
Front panel assy

Fig. 1-1-2 Front panel assembly

Note: *Install the front panel as shown in Fig. 1-1-3 and re-engage the tabs. Supply power and use a spare cassette to check for normal loading and eject operations.*

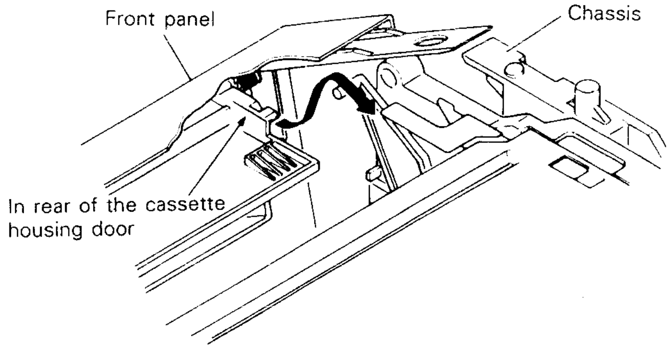

Front panel
Chassis
In rear of the cassette housing door

Fig. 1-1-3 Cassette housing door

1.1.3 Bottom cover

1. Remove the top cover, then overturn the set.
2. Take out 3 screws Ⓒ, then remove the bottom cover in the direction of arrow and lift away.
3. Disengage the 4 earth plateⓐ.

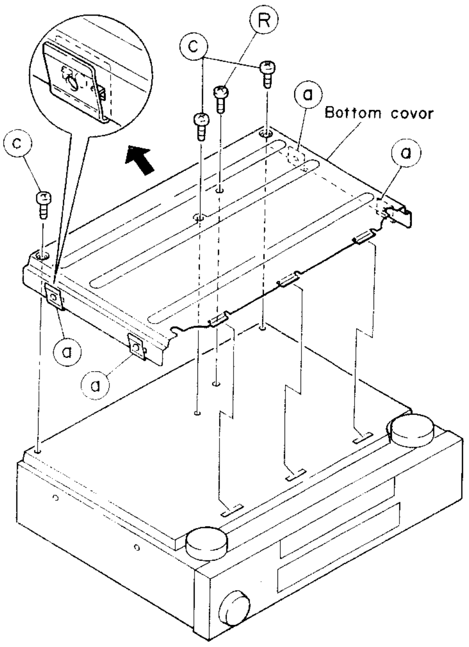

R
C
C
a
Bottom covor
a
a
a

Fig. 1-1-4 Bottom cover

1.1.4 SWITCHING REGULATOR board assembly

1. Remove the top cover.
2. Take out 3 screwsⒹ and 2 screwsⒺ.
3. Remove the SWITCHING REGULATOR board assembly.

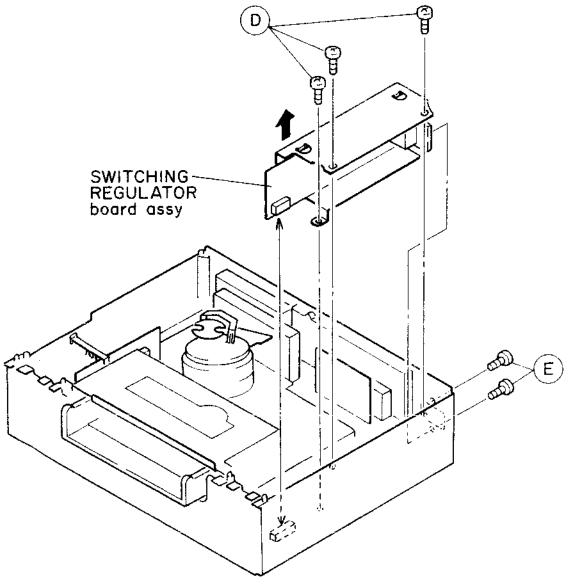

D
SWITCHING
REGULATOR
board assy
E

Fig. 1-1-5 SWITCHING REGULATOR board assembly

1.1.5 DISPLAY & SWITCH board assemblies

1. Remove the top cover and front panel.
2. Disengage 6 clawsⓐand 4 clawsⓑfrom the chassis.
3. Disconnect connector CN1 from the DISPLAY board assembly.
4. Disconnect 3 connectors CN101,CN102 and CN103 from the SWITCH board assembly.
5. Remove the DISPLAY & SWITCH board assemblies in direction of arrow.

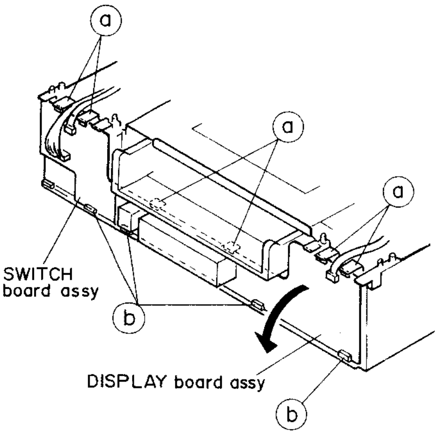

a
a
a
SWITCH
board assy
b
DISPLAY board assy
b

Fig. 1-1-6 DISPLAY & SWITCH board assemblies

1.1.6 Cassette housing assembly

Note: ***When install or remove the cassette housing assembly, be sure set the Eject position of mechanism condition.***

1. Remove the top cover and front panel.
2. Take out 2 screwsⒻand 2 screwsⓂ, tilt up the cassette housing assembly in direction of arrow.
3. Disengage 2 tabsⓐand remove the cassette housing assembly.

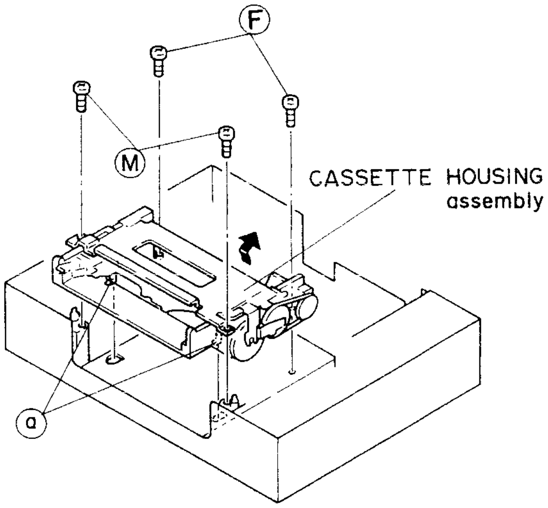

F
M
CASSETTE HOUSING
assembly
a

Fig. 1-1-7 Cassette housing assembly

1.1.7 PRE/REC board assembly

1. Remove the top cover.
2. Take out 2 screws Ⓖ.
3. Disconnect connector CN502 from the PRE/REC board assembly.
4. Remove the PRE/REC board assembly with the shield in direction of arrow.

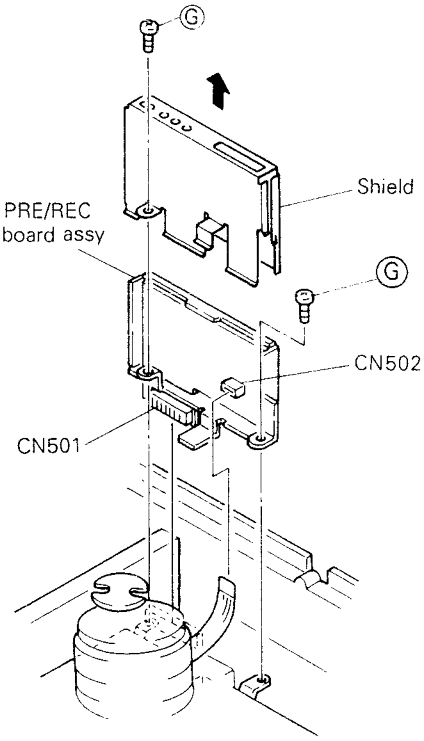

G
Shield
PRE/REC
board assy
G
CN502
CN501

Fig. 1-1-8 PRE/REC board assembly

1.1.8 Main deck assembly

1. Remove the top cover, front panel and cassette housing assembly.
2. Take out 2 screws Ⓗ and remove the mecha bracket.
3. Take out 1 screw Ⓙ and 2 screws Ⓚ, then disengage 3 connectors ⓐ from the chassis.
4. Remove the main deck assembly in direction of arrow.

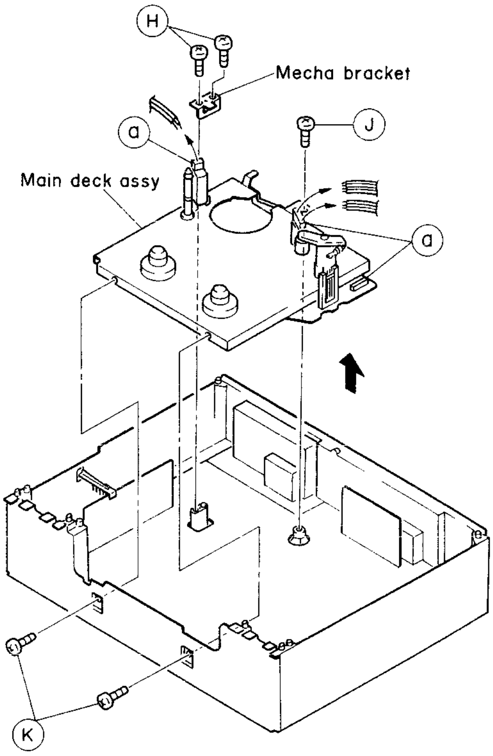

H
Mecha bracket
a
J
Main deck assy
a
K

Fig. 1-1-9 Main deck assembly

1.1.9 DECK TERMINAL board assembly

1. Remove the main deck assembly.
2. Take out 4 screws Ⓛ.
3. Remove the capstan belt and washer.
4. Disconnect 1 connector ⓐ, disengage 2 tabs ⓑ, and remove the DECK TERMINAL board assembly.

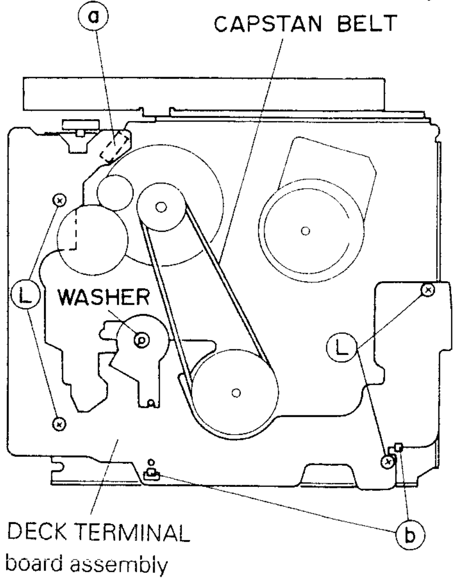

a
CAPSTAN BELT
L
WASHER
L
DECK TERMINAL
board assembly
b

Fig. 1-1-10 DECK TERMINAL board assembly

1.1.10 MAIN board assembly

1. Remove the top cover.
2. Take out 6 screws Ⓝ and 1 screw Ⓟ from the chassis.
3. Remove the MAIN board assembly in the direction of arrow.

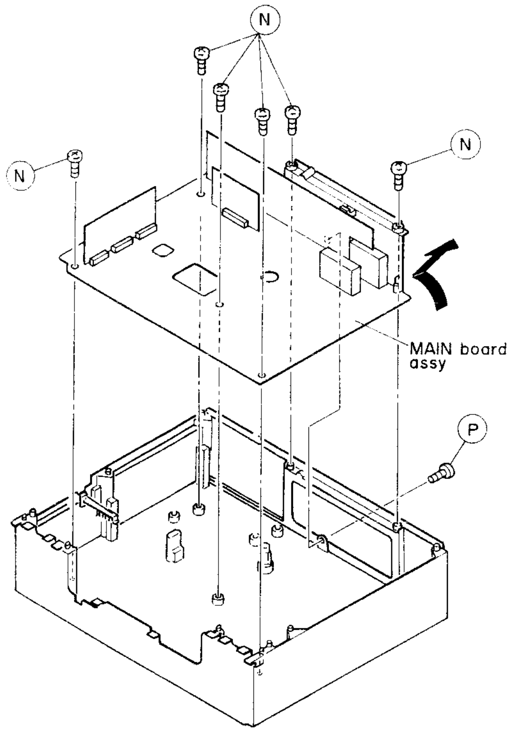

N
N
N
MAIN board assy
P

Fig. 1-1-11 Main board assembly

1.1.11 Service position

1. Remove the mechanism assembly (including cassette housing assembly), MAIN board assembly, SWITCHING REGULATOR board assembly and DISPLAY & SWITCH board assemblies out of the chassis.
2. Re-connect all connectors, then overturn the mechanism assembly and board assemblies, as shown in fig. 1-1-12.
3. Check the pattern side of main board assembly.

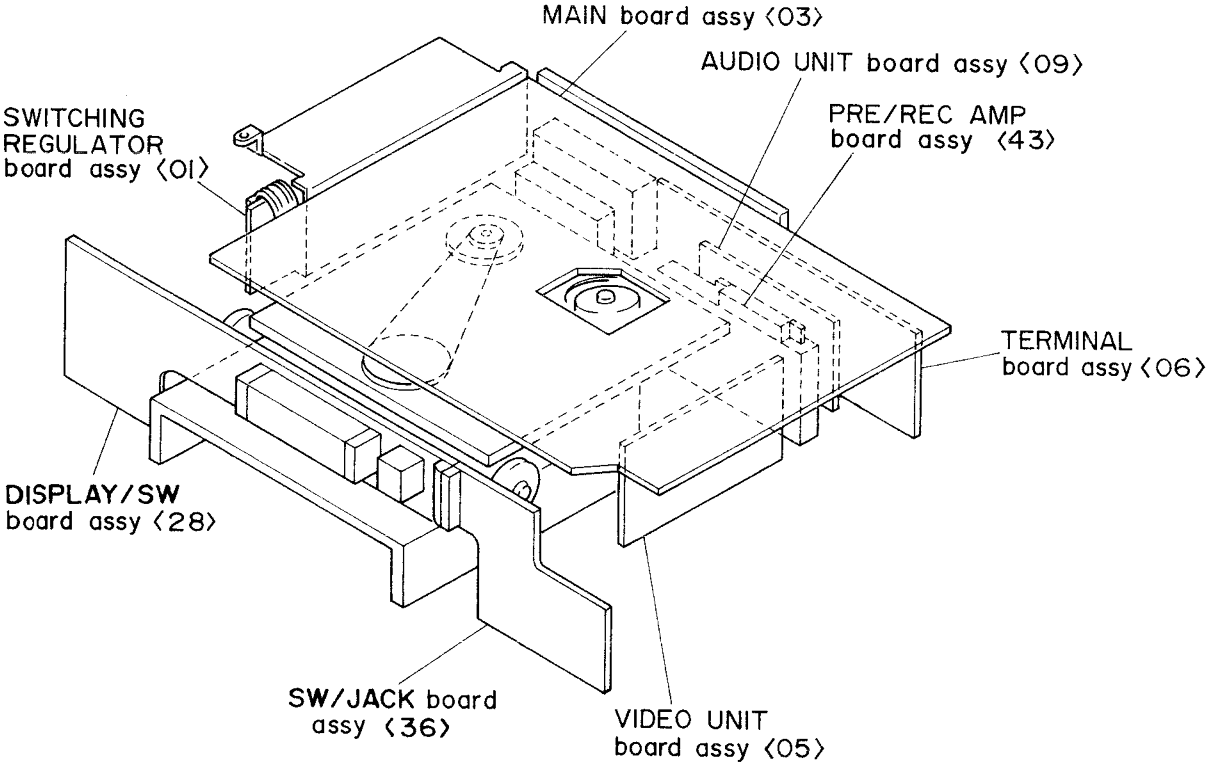

MAIN board assy ⟨03⟩
AUDIO UNIT board assy ⟨09⟩
SWITCHING REGULATOR board assy ⟨01⟩
PRE/REC AMP board assy ⟨43⟩
TERMINAL board assy ⟨06⟩
DISPLAY/SW board assy ⟨28⟩
SW/JACK board assy ⟨36⟩
VIDEO UNIT board assy ⟨05⟩

Fig. 1-1-12 Service position

SECTION 2
MECHANISM ADJUSTMENT

2.1 PREPARATION

2.1.1 Precautions

1) Disconnect VCR from AC power before soldering.
2) Avoid imparting stress to wires when disengaging connectors.
3) Determine and correct the cause of difficulty before proceeding to adjustments. Do not disturb settings unnecessarily.
4) Use care not to damage tabs, claws, etc. during repairs.
5) Install the cassette housing assembly only when the mechanism is in the Eject or Stop mode position. In the Eject mode, the internal holder of the housing is fully raised. This is fully lowered in the Stop mode.
6) When installing the front panel assembly, be sure to engage the housing door with the door lever of the cassette housing assembly. If this is omitted, the door will not open at Eject and the cassette cannot be removed.
   See Sec.1 DISASSEMBLY.

2.1.2 Check without cassette housing

Mechanism operations can be observed easily by removing the cassette housing assembly. Note the following.

1) Disconnect the power cord from the AC outlet, and remove the top cover, the front panel and the cassette housing assembly in this order.
2) Disable the photo transistor sensor (END SENSOR, START SENSOR) on the main-deck by applying an opaque cover.
3) Set the CASSETTE switch (push switch) to ON.
4) Release the LED GUIDE from the hook while removing it.
5) Connect the pwer cord to the AC outlet and turn on the POWER switch. Select the desired operation modes with the operation buttons or remote control unit. However, notice that without tape, setting for the RWD or FF direction modes produces the Stop mode after a few seconds later and power supply is cut off due to absence of the reel sensor output.

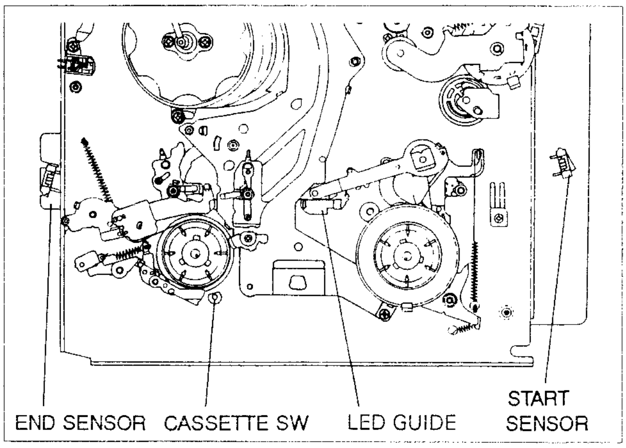


Fig. 2-1-1 Checking without cassette housing

2.1.3 Manual removal of loaded tape

In event of failure which leaves the tape in the loaded position, remove it by the following procedure.

1) Disconnect the power cord from the AC outlet, and remove the top cover and the front panel in this order.
2) Turn the loading motor on the main deck by hand in the direction of the arrow for unloading the tape. At that time, pay careful attention to the tape not to get soiled with grease.
3) Remove the cassette housing assembly.
4) Ture the reel of the cassette tape to take in the slack of the tape. During this work, hold down the cassette tightly by hand, otherwise it may damage the tape.
5) Take off the cassette from the cassette housing.

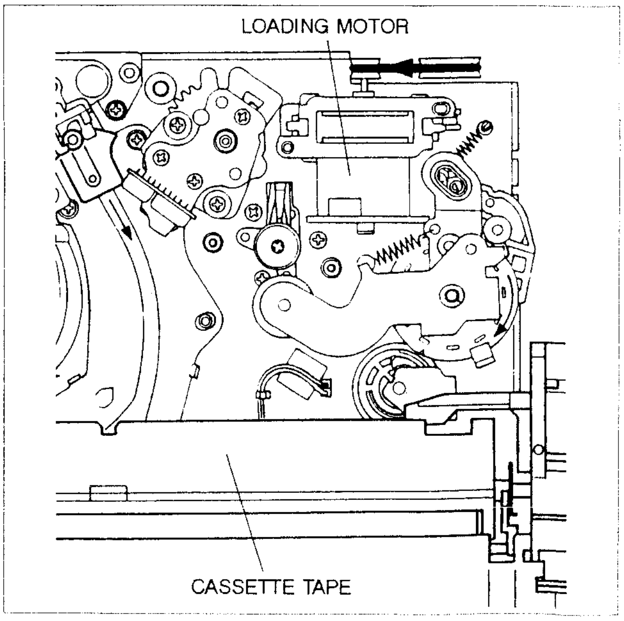


Fig. 2-1-2 Manual removal of loaded tape

2.1.4 Test equipment

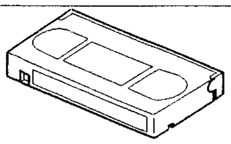
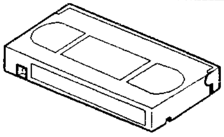
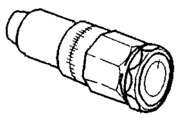
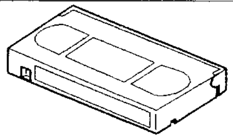
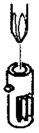
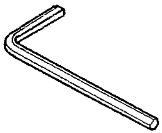
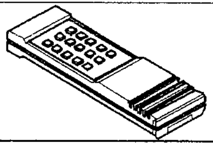
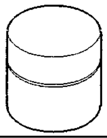
Alignment tape (SP) MH-2	Alignment tape (LP) MH-2L	Torque gauge PUJ48075-2	Back tension cassette gauge PUJ48076-2
			
A/C head positioning tool PTU94010	Line head wrench PGJ04033	Presetting unit PTU94008	Grease PTU94014A
			

Table 2-1-1

2.2 MAIN MECHANISM PARTS

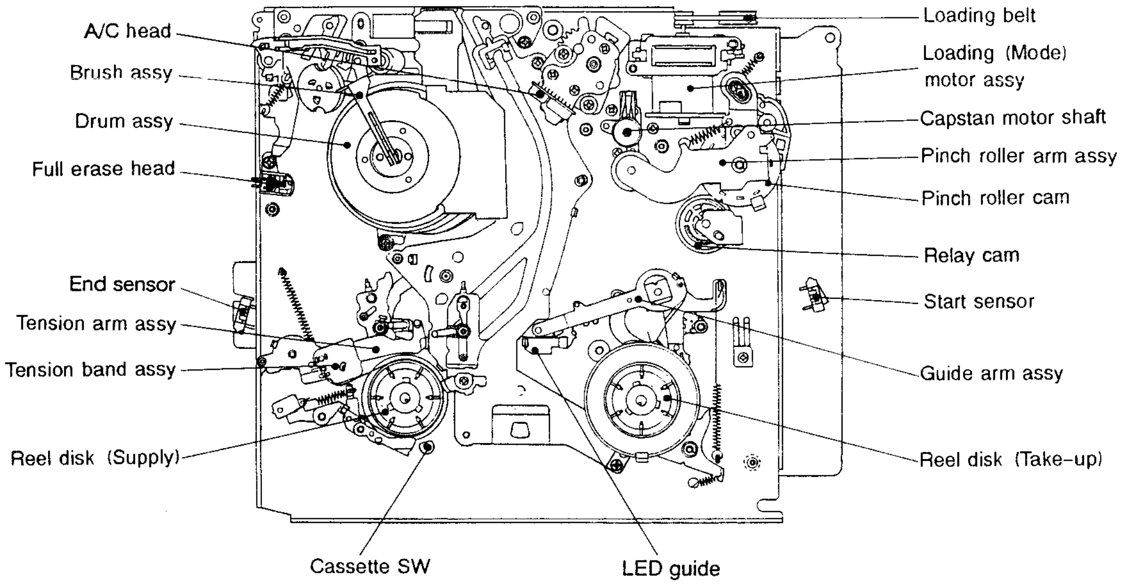

A/C head
Brush assy
Drum assy
Full erase head
End sensor
Tension arm assy
Tension band assy
Reel disk (Supply)
Cassette SW
LED guide
Loading belt
Loading (Mode) motor assy
Capstan motor shaft
Pinch roller arm assy
Pinch roller cam
Relay cam
Start sensor
Guide arm assy
Reel disk (Take-up)

Fig. 2-2-1 Top view of main-deck

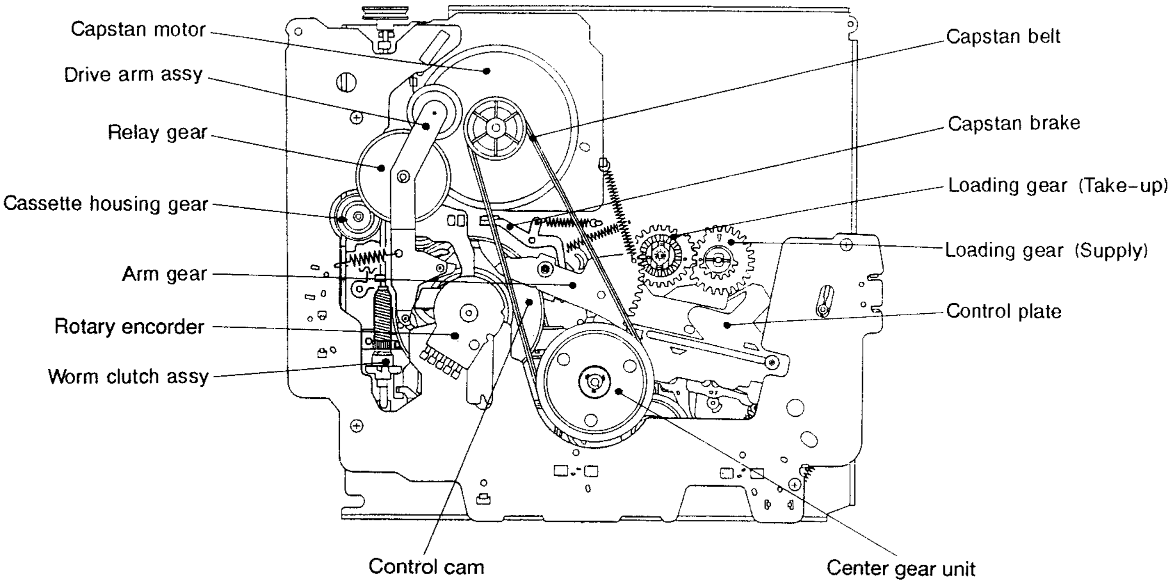

Capstan motor
Drive arm assy
Relay gear
Cassette housing gear
Arm gear
Rotary encorder
Worm clutch assy
Control cam
Center gear unit
Capstan belt
Capstan brake
Loading gear (Take-up)
Loading gear (Supply)
Control plate

Fig. 2-2-2 Bottom view of main-deck

2.2.1 Cleaning

Periodic cleaning of the tape transport system is desirable, but ordinarily not feasible in practice. Therefore, perform cleaning when a set is brought in for repairs or maintenance. Contamination of the video heads, tape guides and brushes can detract from playback picture quality and in extreme cases, even damage the tape. For cleaning, use a fine-mesh cotton cloth (about the texture of a white dress-shirt) moistened in alcohol.

- To clean the video heads, press the moistened cloth gently against the upper drum with fingertip and turn the drum by hand.
- Do not use a vertical stroke, as this may damage the heads.

2.2.2 Lubrication

Oil and grease do not normally require periodic replenshing. Apply only when replacing lubricated parts (also clean and replace lubrication of mating parts if soiled).
For parts and points to apply oil and grease, refer to the exploded views of the mechanism assembly.
Before oiling, clean with alcohol.
Apply one or two drops of oil.
Avoid excess oil.

1) Table 2-2-1 indicates the oil and grease used in this set. Use these or recommended locally available equivalents.

Category	Part No.
Oil	COSMO-HV56
Grease	KANTO-G-31KAV

Table 2-2-1

2) Grease is not required for a replacement cassette housing assembly, as this has been applied at the factory.

Note: *Stir grease that has been stored for an extended period.*

2.3 INSPECTION AND MAINTENANCE

This product employs rotary and moving parts which wear out in the course of usage. Periodic inspection, cleaning, lubrication and maintenance are therefore important for ensuring maximum performance. Worn parts must also be replaced at when required.

2.3.1 Suggested servicing schedule for main components

The following table indicates the suggested period for such service measures as cleaning, lubrication and replacement. In practice, the indicated periods will vary widely according to environmental and usage conditions. However, the indicated components should be inspected when a set is brought for service and the maintenance work performed if necessary.
Also note that rubber parts may deform in time, even if the set is not used.

System	Parts Name	Operation hours						
		250	500	750	1000	1250	1500	2000
Tape Transport	Upper drum assy	★	★	★	○	★	○	○
	A/C head	★			○			○
	Pinch roller arm assy	★	★	★	★	★	★	★
	Full erase head							
	Tension arm assy							
	Lower drum motor assy							
	Capstan motor (Shaft)							
Drive	Capstan motor							○
	Capstan belt			○				○
	Mode motor assy							○
	Loading belt			○				○
	Reel disk (Supply)							○
	Reel disk (Take-up)							○
	Clutch assy							○
	Worm clutch assy							○
Brake	Sub brake assy			○				○
	Main brake assy			○				○
	Sub brake			○				○
	Tension band assy							○
Others	Brush assy			★				○
	Tension band assy							○

★ : Cleaning
○ : Inspection or Replacement if necessary

Table 2-3-1

2.4 MECHANISM DISASSEMBLY & INSTRATION

2.4.1 Disassembly of Mechanism

1. Precaution before disassembling mechanism

This mechanism has an exclusive operation mode provided for disassembling and instration the mechanism, and it is suggested to set the mechanism to this mode before disassembly and instration. The exclusive mechanism operation mode is not generally used and becomes available by manual setting only.

Note: *Although the mechanism can be disassembled as it is set in the EJECT mode, it is recommended to set it to the exclusive mechanism operation mode.*

2. Setting of exclusive mechanism operation mode

Turn the Pinch Roller Cam clockwise as viewed from the upper side so as to rotate the Loading Motor in the direction of the arrow, while adjusting positions of the Pinch Roller Cam and the Relay Cam so that their markings coincide with each other as shown in Fig. 2-4-2.
At that time, both the pole bases should be moved to the full extent in the direction of the Reel Base Assembly (supply side).

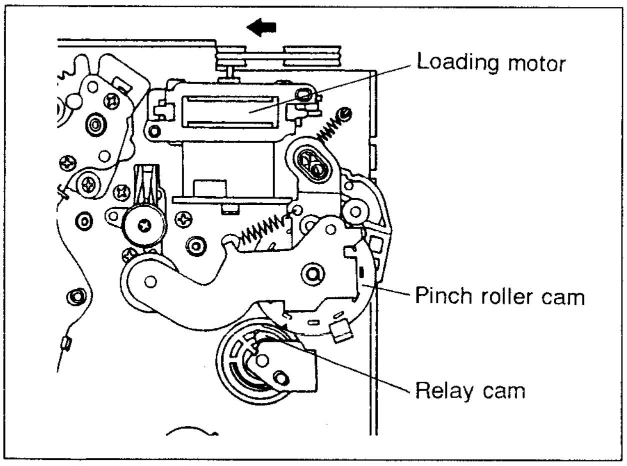


Fig. 2-4-1

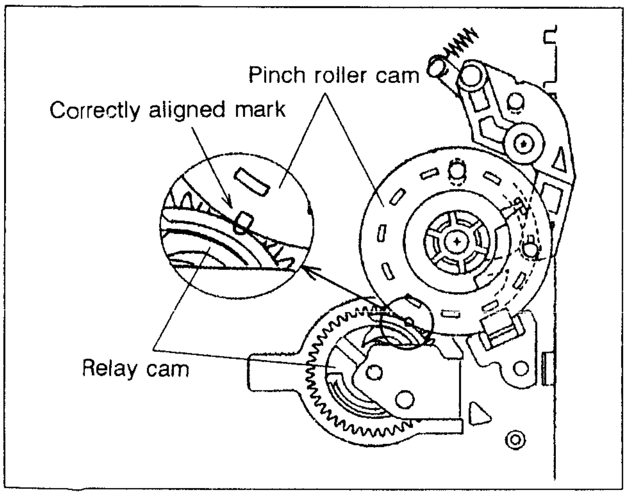


Fig. 2-4-2

3. Disassembling of mechanism assembly in the lower side

1) Unsolder the Rotary Encoder from the DECK TERMINAL board (at five points) and remove the slit washer (1') . Release the Rotary Encoder from the hooks in the both sides while removing it for replacing.
When the Rotary Encoder need not to replace, remove the slit washer only and take off the Rotary Encoder as it is soldered to the DECK TERMINAL board.
2) Remove the tension spring (2") and the slit washer (2') while taking off the Drive Arm Assembly.
3) Remove the Relay Gear.

No.	Part name
1	Rotary encoder
1'	Slit washer
2	Drive arm assembly
2'	Slit washer
2"	Tension spring
3	Relay gear

Table 2-4-1

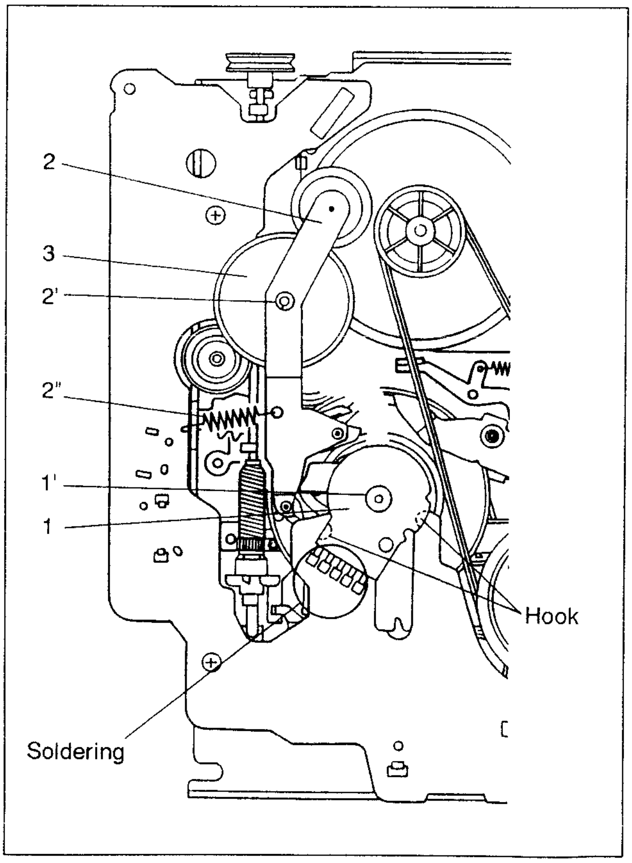


Fig. 2-4-3

4) Disengage the CAPSTAN belt.

5) Remove the 4 screws (5'), disconnect the connector (CN2), and disengage the 2 hooks. Then remove the DECK TERMINAL board.

No.	Part name
4	Belt
5	Deck terminal board assembly
5'	Screws (x4)
5"	Connector (CN2)

Table 2-4-2

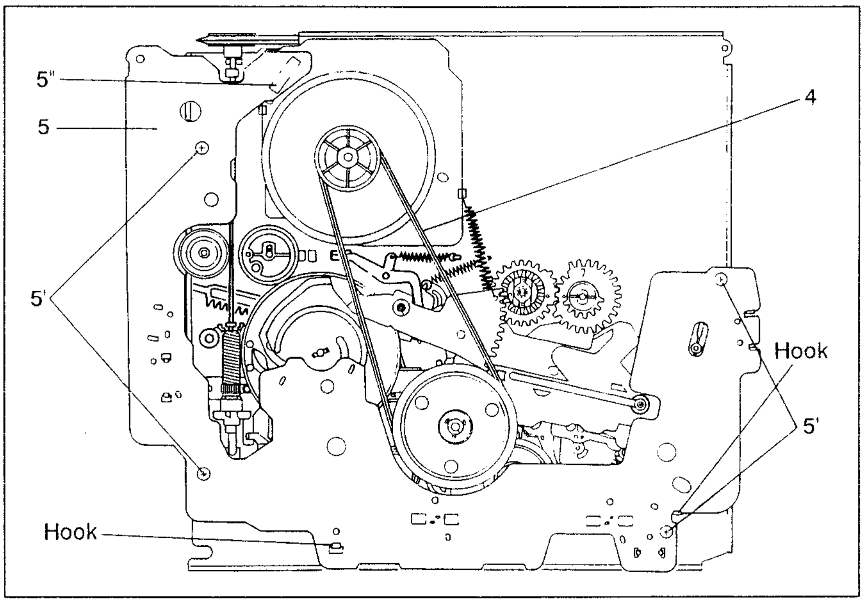


Fig. 2-4-4

6) Remove the slit washer (6') and the tension spring (6") while taking off the Arm Gear.

7) Expand the two center hooks outwards while removing the Control Cam. Carefully do this work not to damage the hooks.

8) Remove the slit washer (8') and the Center Gear Unit.

9) Disengage the loading belt, and release the Worm Clutch Assembly from the 3 hooks while taking it off. Carefully do this work not to damage the hooks.

10) Remove the slit washer (10') and the Control Plate.

No.	Part name
6	Arm gear
6'	Slit washer
6"	Tension spring
7	Control cam
8	Center gear unit
8'	Slit washer
9	Worm clutch assembly
9'	Belt
10	Control plate
10'	Slit washer

Table 2-4-3

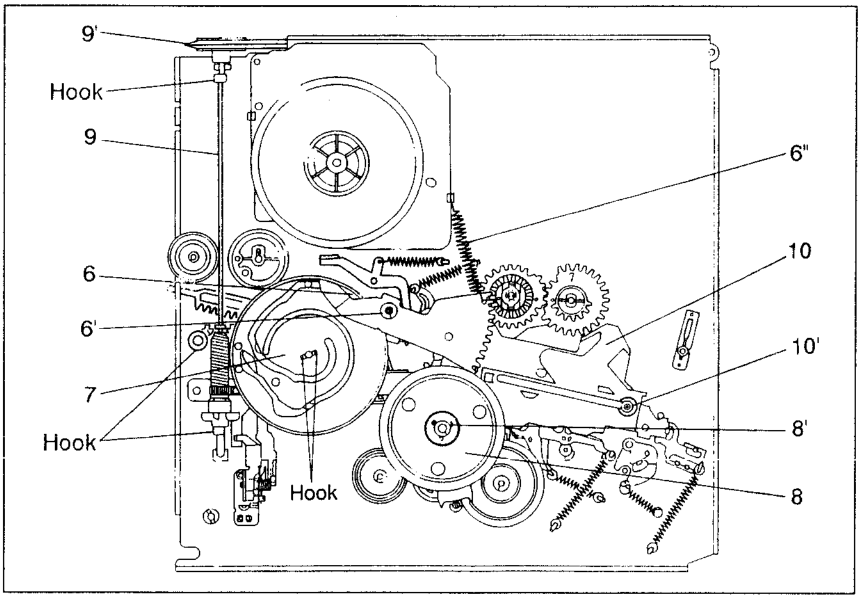


Fig. 2-4-5

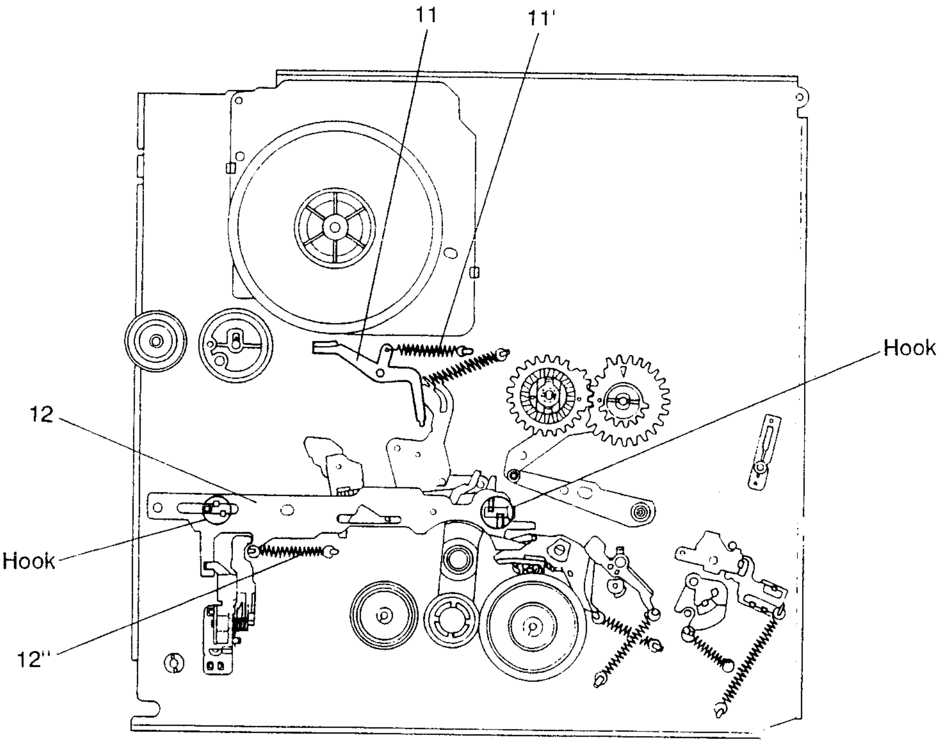
11) Disengage the tension spring (11') and remove the Capstan Brake.
12) Disengage the tension spring (12') by a side, and release the Slide Plate from the two hooks while taking it off.
13) Remove the slit washer (13') and the Cassette Housing Gear.
14) Spread out the center hook of the Relay Cam with care not to damage the hook, and remove the Relay Cam.
15) Pull out the S-switch (S-VHS) pin, which requires careful attention not to lose it because it becomes free when the DECK TERMINAL board is removed.
16) Set the Slide Base Assembly free, then move it upwards while removing it.
17) Remove the Reset Lever.
18) Remove the Idler Unit.
19) Disengage the tension spring (19') by a side, and remove the Idler Cancel Lever.
20) Remove the slit washer (20') of the Clutch Gear Unit (TU side) and take it off.
21) Remove the slit washer (21') of the Clutch Gear Unit (SUP side) and take it off.
22) Expand the two outer hooks in the center of the Loading Gear (TU side) and take off the Loading Gear. Carefully do this work not to damage the hooks.
23) Remove 1 screw (23') and the arm of the Loading Gear Assembly (SUP side), and release the Loading Gear Assembly (SUP) from the 2 hooks by expanding them while taking it off in the free status. During this work, pay careful attention to the hooks not to damage them.
24) Disengage the tension spring (24') by a side and escape the Main Brake Assembly from the center hook while taking it off.
25) Disengage the tension spring (25') by a side and take off the Take-up Lever.
26) Disengage the tension spring (26') by a side and escape the Off Lever Assembly from the center hook while taking it off.
27) As the Slider Assembly on the upper side of the deck is removed, disengage the tension spring (27') and expand the center hook while taking off the Tension Lever Assembly.
28) Disengage the tension spring on the upper side of the deck, and mode the spring base upwards to remove it.
29) Remove the 3 screws from the upper side of the deck, release the Capstan Motor from the 2 hooks on the lower part of the deck while taking off the motor.

No.	Part name
11	Capstan brake assembly
11'	Tension spring
12	Slide plate
12'	Tension spring

Table 2-4-4

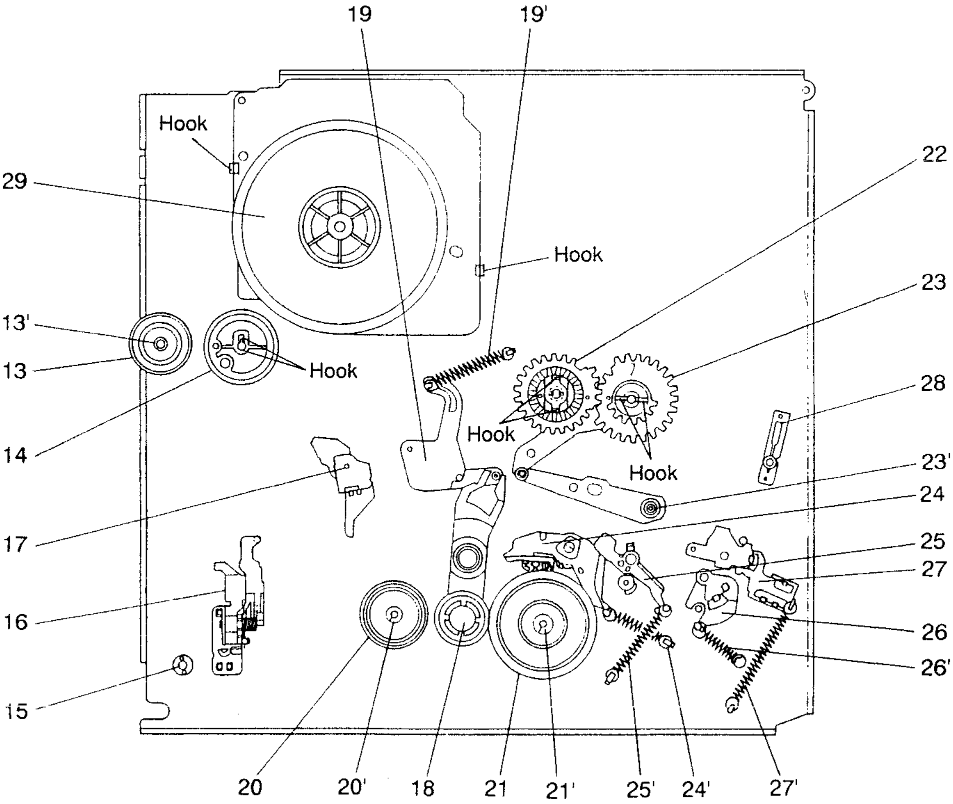
No.	Part name
13	Cassette housing gear
13'	Slit washer
14	Relay cam
15	S-SW pin (S-VHS)
16	Slide base assembly
17	Reset lever
18	Idler unit
19	Idler cancel lever
19'	Tension spring
20	Clutch gear unit (TU)
20'	Slit washer
21	CLutch gear unit (SUP)
21'	Slit washer
22	Loading gear (TU)
23	Loading gear assembly (SUP)
23'	Screw
24	Main brake assembly (SUP)
24'	Tension spring
25	Take-up lever
25'	Tension spring
26	OFF lever assembly
26'	Tension spring
27	Tension lever assembly
27'	Tension spring
28	Spring base
29	Capstan Motor

Table 2-4-5



11
11'
Hook
12
Hook
12''

Fig. 2-4-6



19
19'
22
Hook
29
Hook
23
13'
13
Hook
14
Hook
Hook
28
23'
24
17
25
27
16
26
26'
15
20
20'
18
21
21'
25'
24'
27'

Fig. 2-4-7

4. Disassembling of mechanism assembly in the upper side

1) Remove the slit washer (1'), the Pinch Roller Arm Assembly and the compression spring (1") in this order.
2) Release the Pinch Roller Cam from the hook while taking it off.
3) Disengage the compression spring (3') and take off the Pinch Roller Lever.

No.	Part name
1	Pinch roller arm assembly
1'	Slit washer
1"	Compression spring
2	Pinch roller cam
3	Pinch roller lever
3'	Compression spring

Table 2-4-6

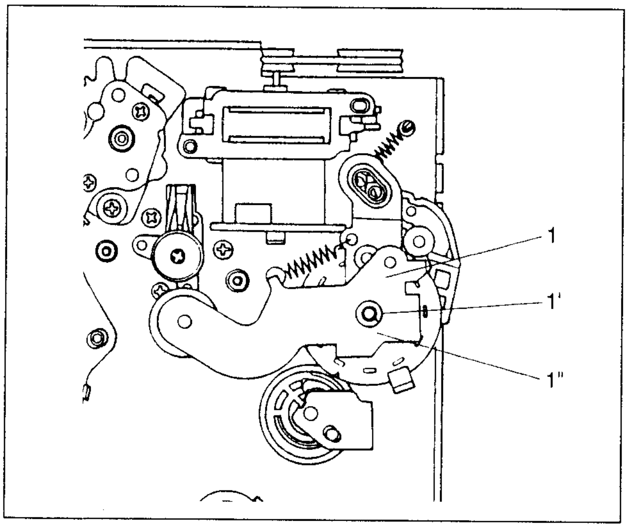


Fig. 2-4-8

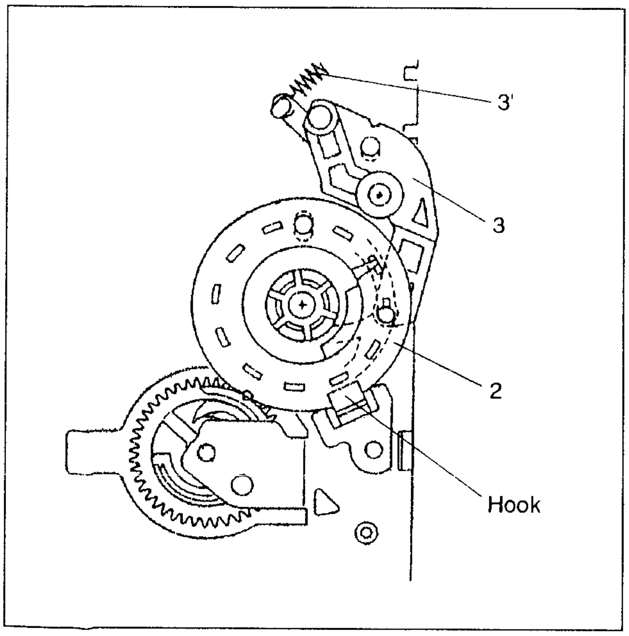


Fig. 2-4-9

2.4.2 Instration of mechanism

1. Precaution before reassembling mechanism

Check that all the mechanism parts on the upper side of the deck are set in the exclusive mechanism operation mode.

2. Instration of mechanism assembly parts in the lower side

1) Install the Capstan Motor and tighten it with 3 screws from the upper side of the deck.
2) Install the Spring Base and engage the tension spring on the upper side of the deck.
3) Install the Tension Lever Assembly and engage the tension spring (3').
4) Install the Off Lever Assembly and engage the tension spring (4').
5) Install the Take-up Lever and engage the tension spring (5').
6) Install the Main Brake (SUP side) and engage the tension spring (6').
7) Install the Loading Gear Assembly (SUP side) and fix the arm and the Pole Base Assembly with a screw (7').
8) Confirm the mechanism mode that is set to the exclusive mechanism operation mode, and install the Loading Gear (TU side) with the hole glined with the hole on the Loading Gear Assembly (SUP side) as the Tension Arm is returned to the front side.
9) Install the Clutch Gear (SUP side) and the slit washer (9') with care not to contact with the Main Brake.
10) Install the Clutch Gear Unit (TU side) and the slit washer (10').
11) Install the Idler Cancel Lever and engage the tension spring (11').
12) Install the Idler Unit.
13) Install the Reset Lever.
14) Install the Slide Base Assembly with care of re-engaging the tension spring on the upper side of the deck.
15) Install the S-switch (S-VHS) pin.
16) Install the Relay Cam whith the hole aligned with hole on the chassis.
17) Install the Cassette Housing Gear and the slit washer (17').

No.	Part name
1	Capstan Motor
2	Spring base
3	Tension lever assembly
3'	Tension spring
4	OFF lever assembly
4'	Tension spring
5	Take-up lever
5'	Tension spring
6	Main brake assembly (SUP)
6'	Tension spring
7	Loading gear assembly (SUP)
7'	Screw
8	Loading gear (TU)

Table 2-4-7

No.	Part name
9	Clutch gear unit (SUP)
9'	Slit washer
10	Clutch gear unit (TU)
10'	Slit washer
11	Idler cancel lever
11'	Tension spring
12	Idler unit
13	Reset lever
14	Slide base assembly
15	S-SW pin (S- VHS)
16	Relay cam
17	Cassette housing gear
17'	Slit washer

Table 2-4-8

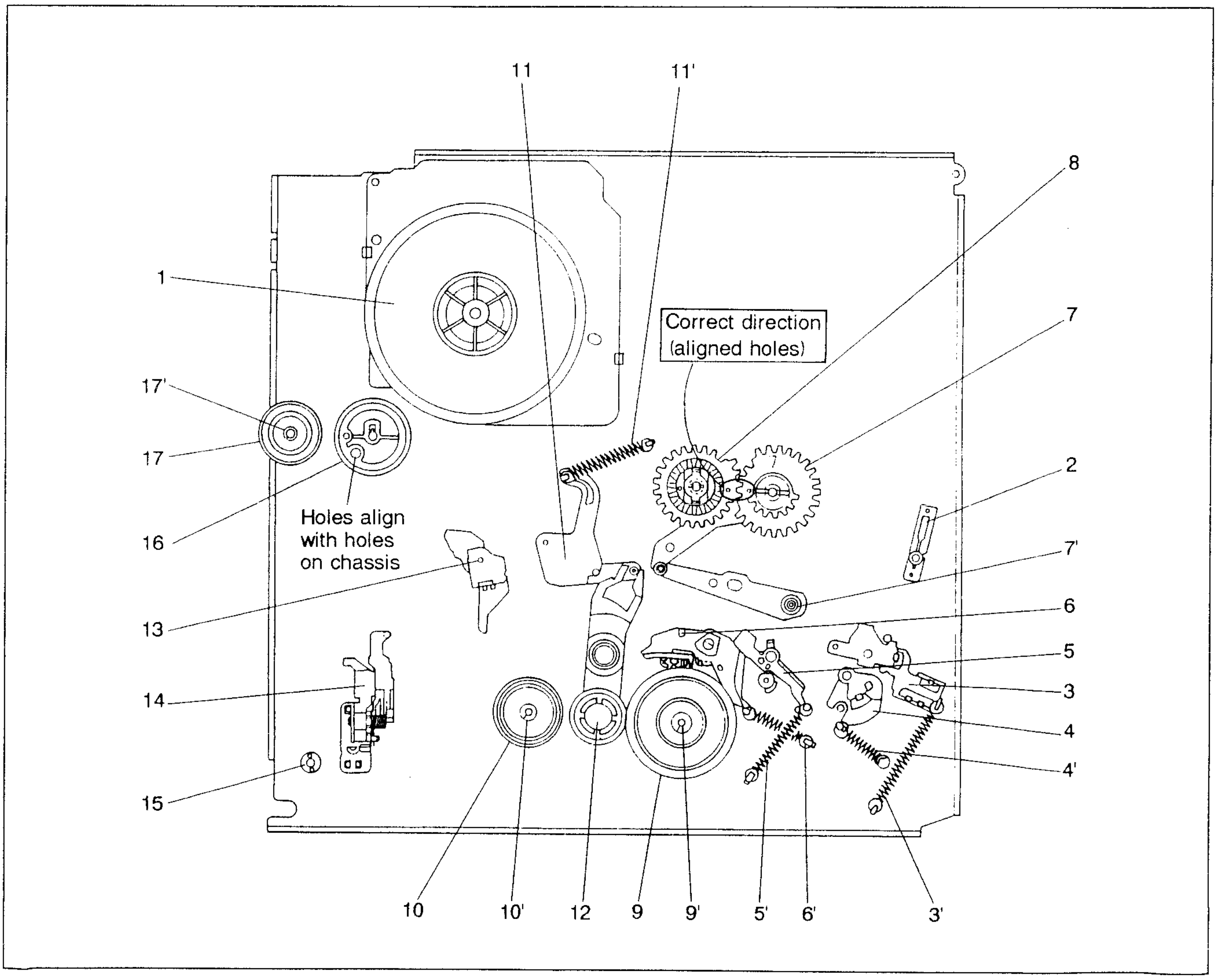

11
11'
8
1
Correct direction (aligned holes)
7
17'
17
2
16
Holes align with holes on chassis
7'
13
6
5
14
3
4
4'
15
10
10'
12
9
9'
5'
6'
3'

Fig. 2-4-10

18) Install the Slide Plate with the lower stud of the Main Brake (TU side) set in the groove, and engage the tension spring (18'). Set the Slide Plate on the deck with the hole aligned with the hole on the chassis in the stage to install the mechanism parts on the upper side of the deck.

Note: *If the Slide Plate is pulled to the phase adjusting position in the above mentioned state, the Main Brake (SUP side) catches the tip of Slide Plate and it is locked accordingly. Do not continue reassembling of the mechanism parts in this condition to prevent the Slide Base Assembly from getting damaged.*

19) Install the Capstan Brake Assembly and engage the tension spring (19').

No.	Part name
18	Slide plate
18'	Tension spring
19	Capstan brake assembly
19'	Tension spring

Table 2-4-9

20) Push the Take-up Lever with the two holes alinged with the holes on the chassis (see Fig. 2-4-12). In this condition install the Control Plate and the slit washer (20').

21) Install the Worm Clutch Assembly and engage the belt (for the Mode Motor) between the Worm Assembly and the Loading Motor.

No.	Part name
20	Control plate
20'	Slit washer
21	Worm clutch assembly
21'	Belt

Table 2-4-10

22) Push the Idler Cancel Lever while install the Center Gear Unit and the slit washer (22') (see Fig. 2-4-13) with careful attention to the studs of the Idler Cancel Lever and the chassis so that both the studs are correctly set in the upper and the lower grooves of the Center Gear Unit respectively.

23) Install the Control Cam with the hole aligned with hole on the chassis. At that time, the stud in the tip of the Slide Base Assembly must be exactly set in the outer groove of the Control Cam.

No.	Part name
22	Center gear unit
22'	Slit washer
23	Control cam

Table 2-4-11

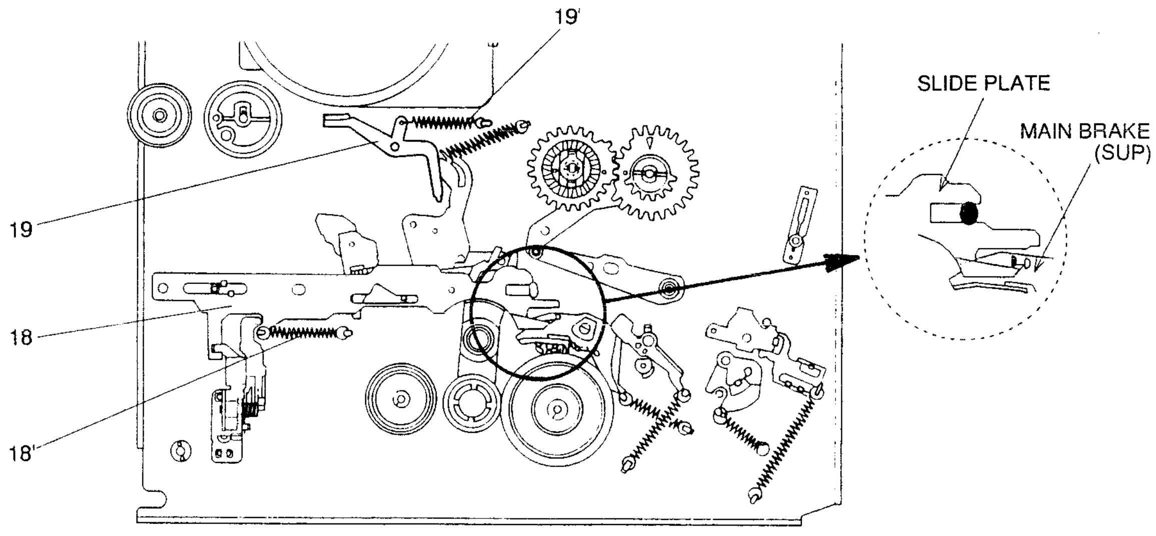

19'
SLIDE PLATE
MAIN BRAKE (SUP)
19
18
18'

Fig. 2-4-11

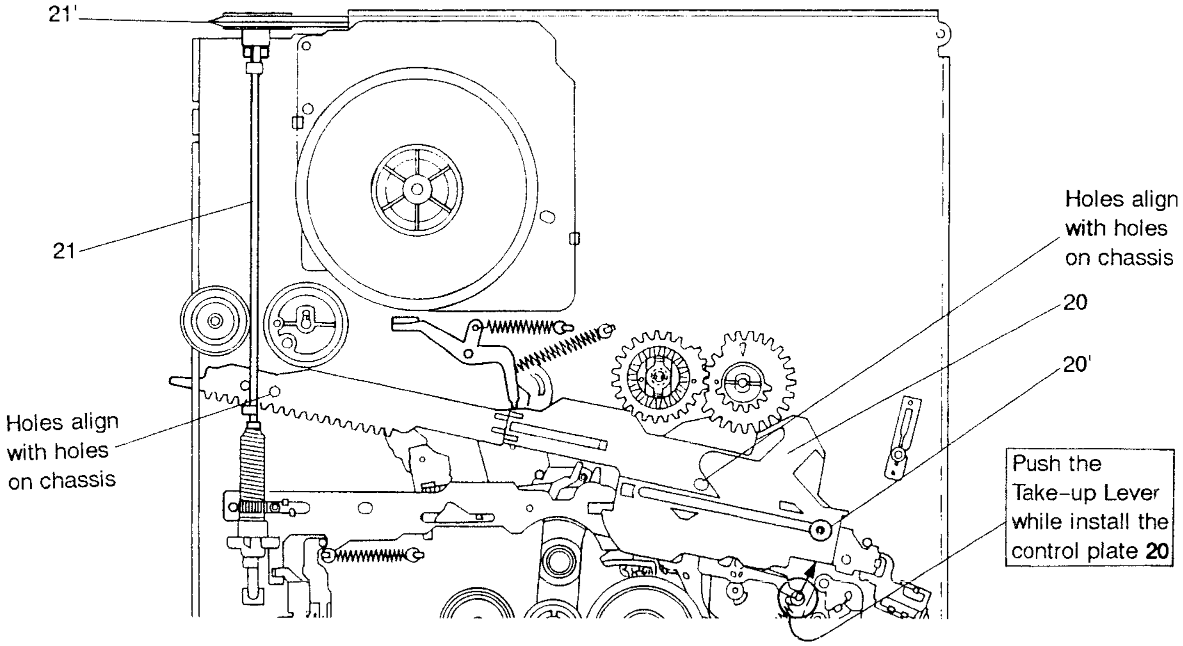

21'
21
Holes align with holes on chassis
20
20'
Holes align with holes on chassis
Push the Take-up Lever while install the control plate **20**

Fig. 2-4-12

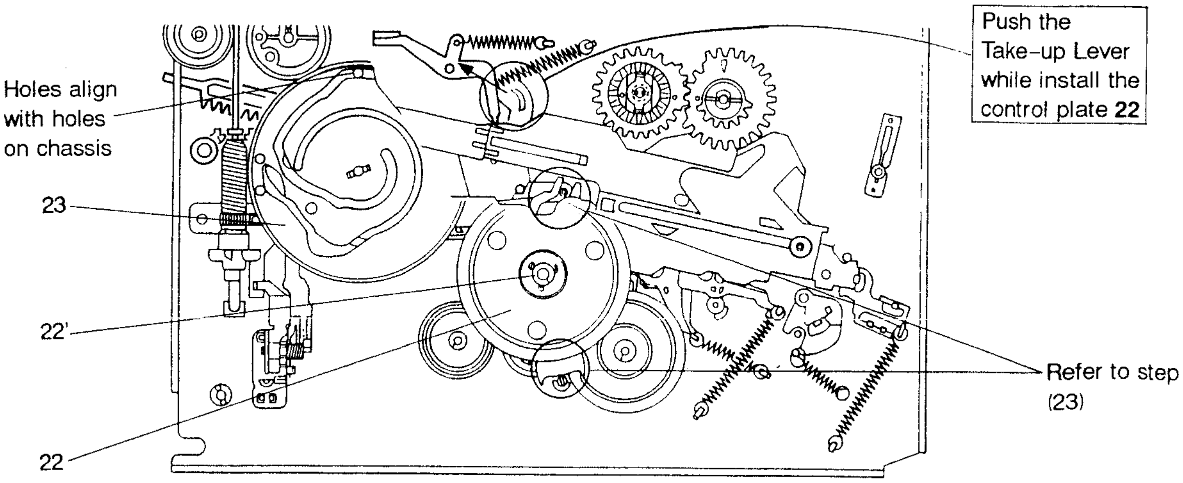

Push the Take-up Lever while install the control plate **22**
Holes align with holes on chassis
23
22'
22
Refer to step (23)

Fig. 2-4-13

24) Install the Arm Gear with the hole aligned with the hole on the Loading Gear (TU side) while secure with the slit washer (24'). At that time, make sure to set the stud of the Arm Gear in the groove of the Control Cam exactly.

No.	Part name
24	Arm gear
24'	Slit washer
24"	Tension spring

Table 2-4-12

25) When installing the DECK TERMINAL board, proceed in the following order; connect CN2, engage 2 hooks, and tighten the board with 4 screws (25').
When the Rotary Encoder is soldered to the DECK TERMINAL board, confirm that the hole of the Rotary Encoder is correctly positioned first, then install the DECK TERMINAL board and the slit washer.
26) Engage the belt (for the Capstan Motor) between the Capstan Motor and the Center Gear Unit.

No.	Part name
25	Deck Terminal board
25'	Screws (x 4)
25"	Connector (CN2)
26	Belt

Table 2-4-13

27) Install the Relay Gear.
28) Install the Drive Arm Assembly, slit washer (28'), and engage the tension spring (28").
29) Install the Rotary Encoder after confirming that the hole is correctly positioned, engage the slit washer (29') and solder the Rotary Encoder.

No.	Part name
27	Relay gear
28	Drive arm assembly
28'	Slit washer
28"	Tension spring
29	Rotary encoder
29'	Slit washer

Table 2-4-14

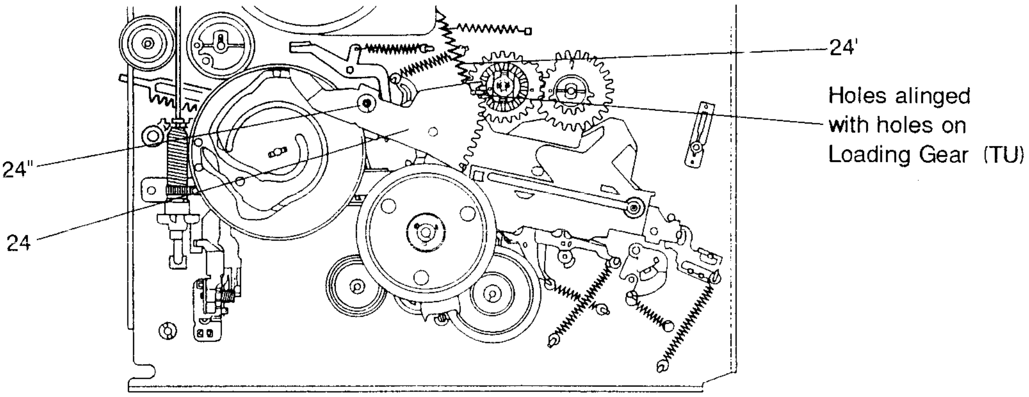

24'
Holes alinged
with holes on
Loading Gear (TU)
24"
24

Fig. 2-4-14

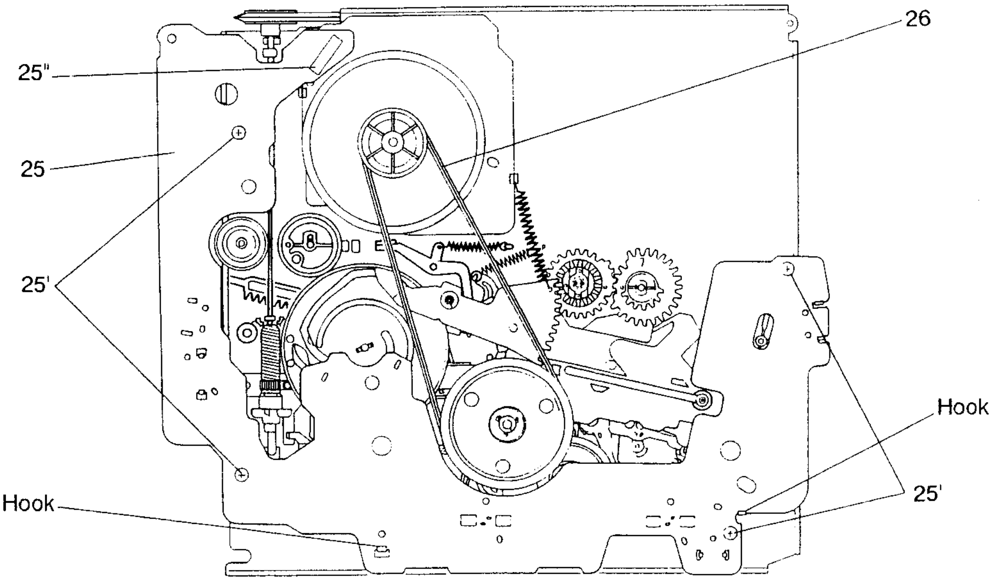

26
25"
25
25'
Hook
Hook
25'

Fig. 2-4-15

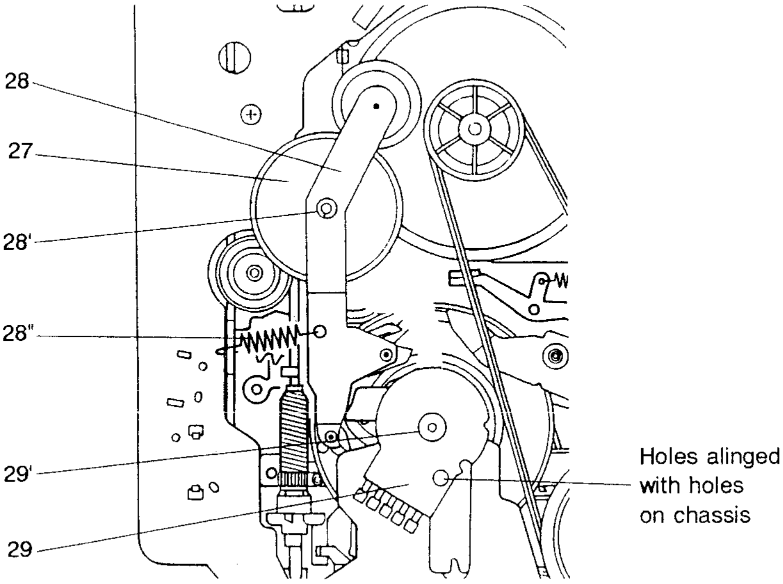

28
27
28'
28"
29'
29
Holes alinged
with holes
on chassis

Fig. 2-4-16

2. Reassembling of mechanism assembly parts in the upper side

1) Install the Pinch Roller Lever and engage the tension spring (1').
2) Install the Pinch Roller Cam as its marking matches with that of the Relay Cam. At that time, the two holes of the Pinch Roller Cam and the chassis should not match completely with each other but double by half as shown in the figure below.
3) Set in the compression spring (3") and install the Pinch Roller Arm Assembly so that the stud of the Pinch Roller Lever is positioned in the elliptical groove of the Pinch Roller Assembly, then engage the slit washer (3').

No.	Part name
1	Pich roller lever
1'	Tension spring
2	Pinch roller cam

Table 2-4-15

No.	Part name
3	Pinch roller arm assembly
3'	Slit washer
3"	Compression spring

Table 2-4-16

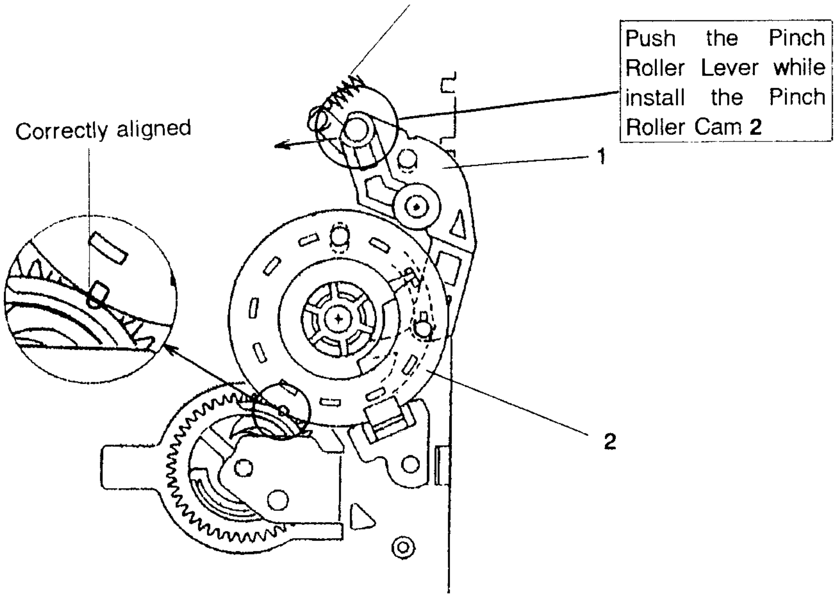

Correctly aligned
Push the Pinch Roller Lever while install the Pinch Roller Cam **2**
1
2

Fig. 2-4-17

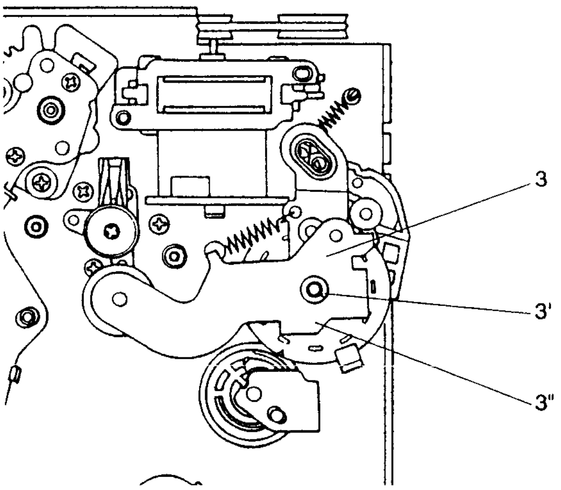


Fig. 2-4-18

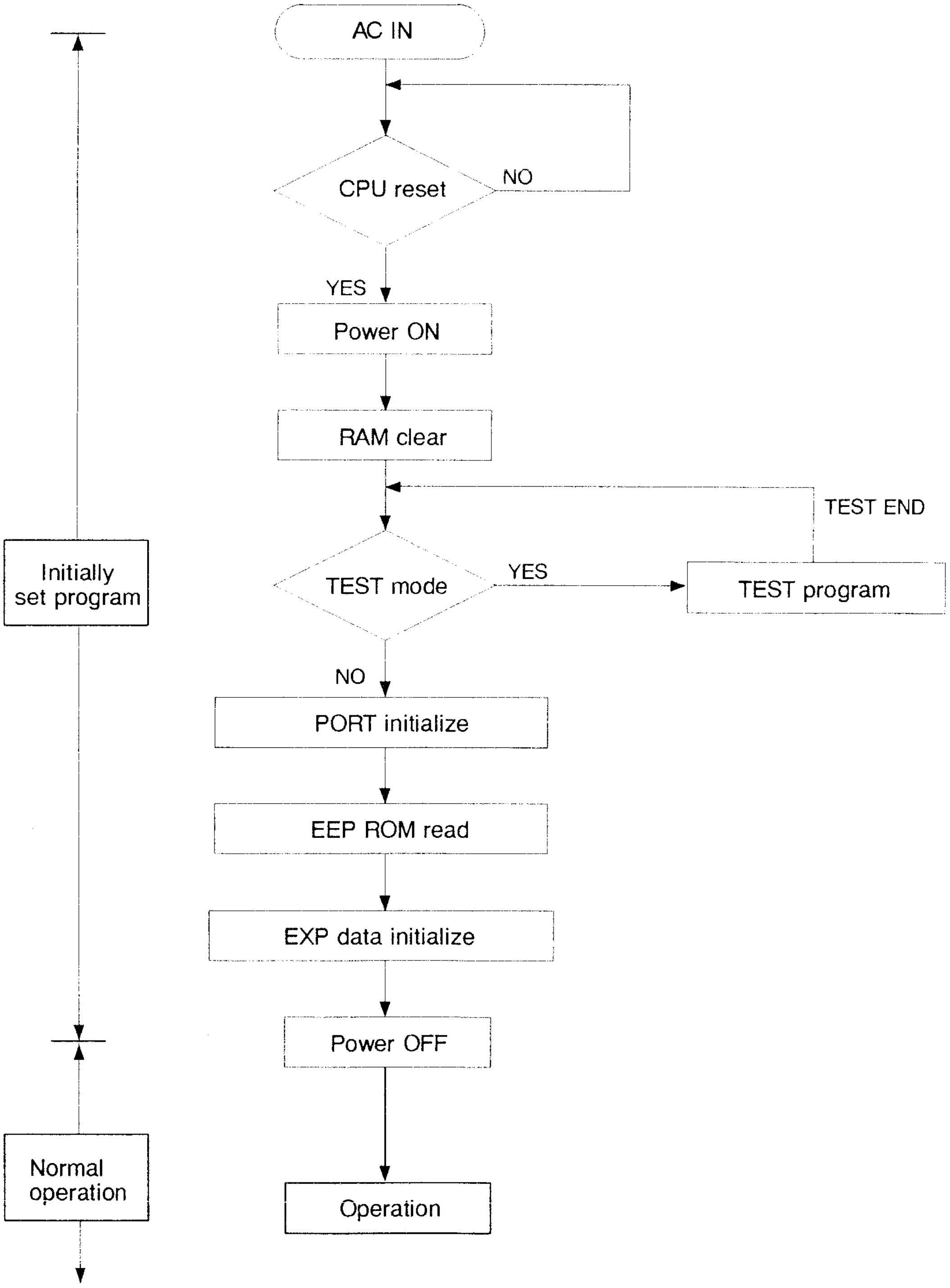
2.5 Quick advice

1. Check of faulty mechacon CPU

The following flowchart shows the initially set program that the mechacon CPU executes just after the AC power is supplied to the set.

If this program is not executed normally, the set is inoperable or falls in malfunction. For example, the case of "operation unacceptable" is mostly interpretable as the initial program is not executed normally. Generally, this trouble is not caused by problems of the mechacon CPU itself but results from something faulty in the peripheral parts (elements) of the CPU. This phenomenon rather occurs in this model since it transmits information of operation switches and sensors to the CPU in serial data through the input EXP. IC.

Therefore, this set needs to check the EXP. IC, EEP ROM, etc. besides Vcc, X'tal and so forth of the mechacon CPU.


AC IN
CPU reset
NO
YES
Power ON
RAM clear
TEST END
TEST mode
YES
TEST program
NO
PORT initialize
EEP ROM read
EXP data initialize
Power OFF
Operation
Initially set program
Normal operation

2.6 MAIN PARTS REPLACEMENT AND ADJUSTMENT

2.6.1 Stator assembly

1) Expand the hook in the direction indicated by the arrow and remove the Cleaner Assembly.
2) Take out 1 screw (D), then remove the Earth Plate.
3) Take out 2 screws (A).
4) Raise the Stator Assembly in the direction indicated by the arrow to remove it (also remove the Inertia Roller).
5) Remove the flat cable.
6) To install, first secure the flat cable, then insert 2 screws (A).
7) After installing, be sure to perform switching point adjustment.

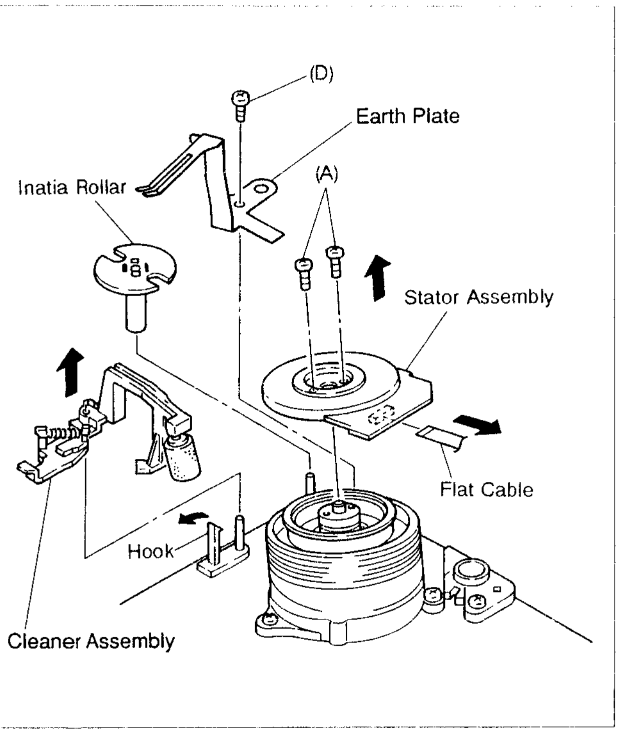

(D)
Earth Plate
Inatia Rollar
(A)
Stator Assembly
Flat Cable
Hook
Cleaner Assembly

Fig. 2-6-1 Stator assembly

2.6.2 Rotor assembly

1) Remove the Cleaner Assembly, Eart Plate and Stator Assembly.
2) Take out 2 screws (B) and remove the Rotor Assembly.

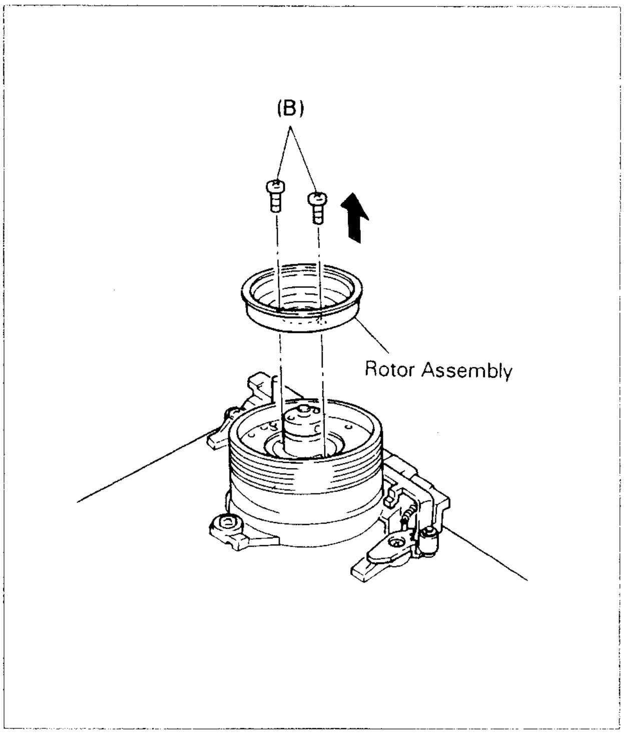

(B)
Rotor Assembly

Fig. 2-6-2 Rotor assembly-1

Note: *A normal picture will not be obtained unless the phase is properly aligned when installing the Rotor Assembly. Also note there are three types of Rotors.*

3) Align the Upper Drum and Rotor Assembly phase as indicated in Fig. 2-6-3.

4) Overlap holes (a) of the Upper Drum with holes (b) of the Rotor Assembly (align holes in 3 locations) and secure with 2 screws (B) (see Fig. 2-6-2).

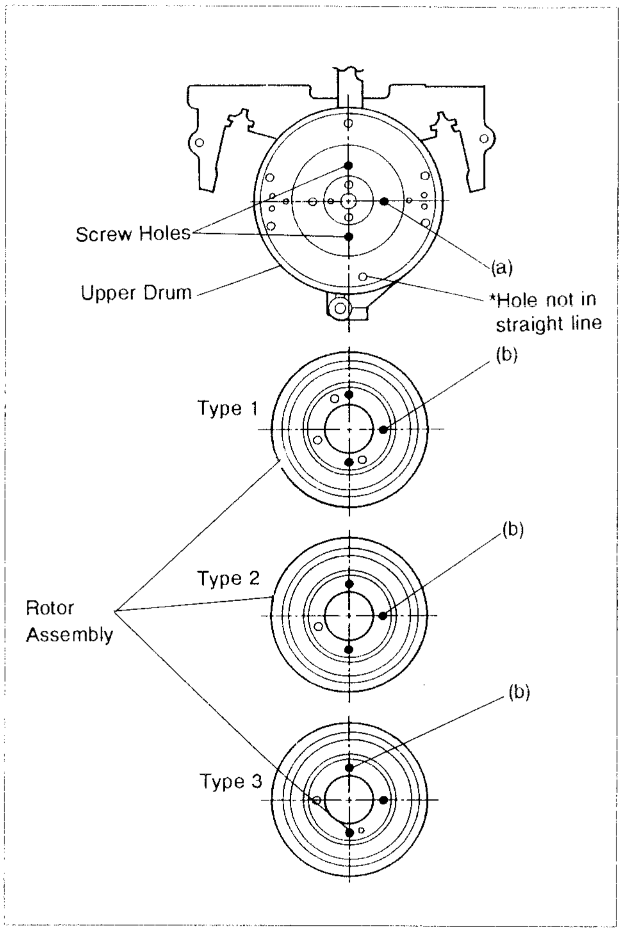

Screw Holes
Upper Drum
(a)
*Hole not in straight line
(b)
Type 1
(b)
Type 2
Rotor Assembly
(b)
Type 3

Fig. 2-6-3 Rotor assembly-2

2.6.3 Drum sub assembly

1) Disengage the PRE/REC AMP board connector and flat cable.

2) Take out 3 screws (C) and remove the Drum Subassembly.

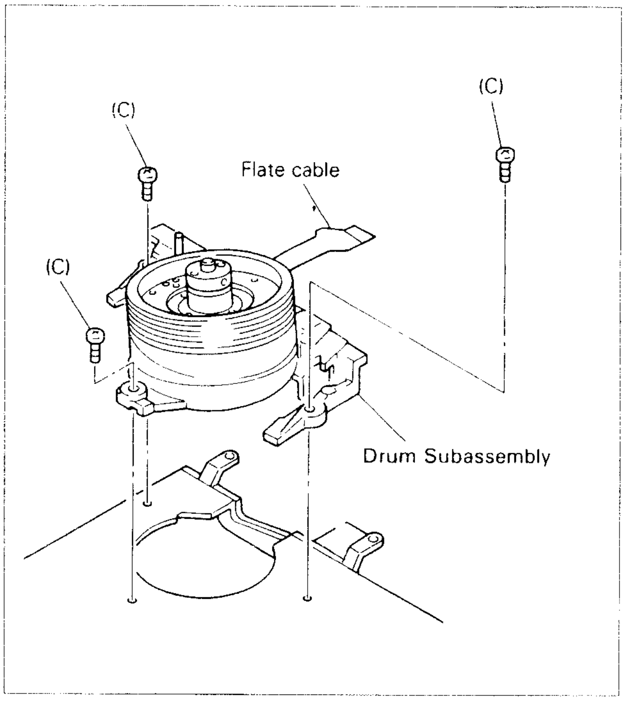

(C)
(C)
Flate cable
(C)
Drum Subassembly

Fig. 2-6-4 Drum sub assembly

2.6.4 Upper Drum assembly

1. Removal

1) Remove the Stator and Rotor Assemblies.
2) Use a 1.5 mm hexagonal wrench to loosen the Collar Assembly screw and remove the Collar Assembly.
3) Remove the Upper Drum Assembly and use tweezers to remove the Washer.

Note: *As grease is applied to the Brush, use care to avoid contamination by dirt or other foreign matter. If the Brush is replaced, use care regarding top and bottom direction and be sure to apply the specified grease (PTU94014A) to the contact sections (2 locations).*

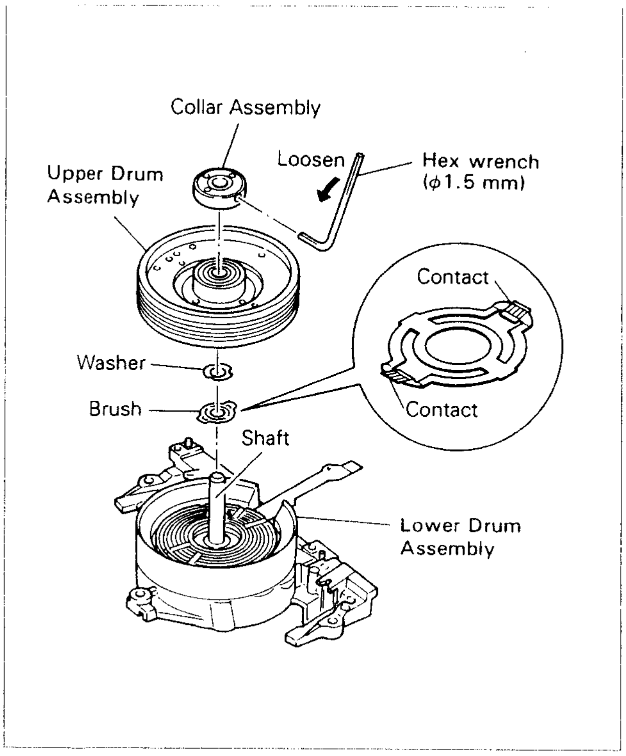

Collar Assembly
Upper Drum Assembly
Loosen
Hex wrench (ϕ1.5 mm)
Contact
Washer
Brush
Contact
Shaft
Lower Drum Assembly

Fig. 2-6-5 Upper drum assembly-1

2. Installation

1) Use an air brush to clean the Lower Drum Assembly and the coil section of the new Upper Drum Assembly.
2) Set a new Washer and Upper Drum Assembly on the Drum shaft (see Fig. 2-6-5).

Note: *Be sure to use the new Washer supplied with the replacement Upper Drum Assembly.*

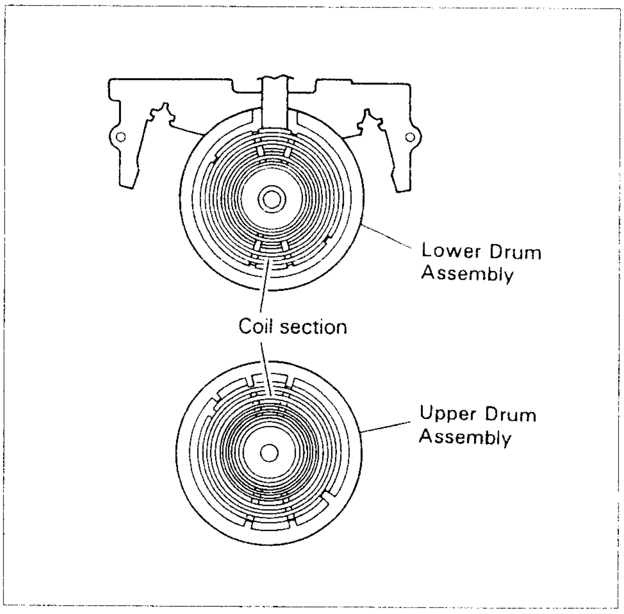

Lower Drum Assembly
Coil section
Upper Drum Assembly

Fig. 2-6-6 Upper drum assebly-2

3) Note the top and bottom of the Collar Assembly and determine the position as indicated in Fig. 2-6-7.

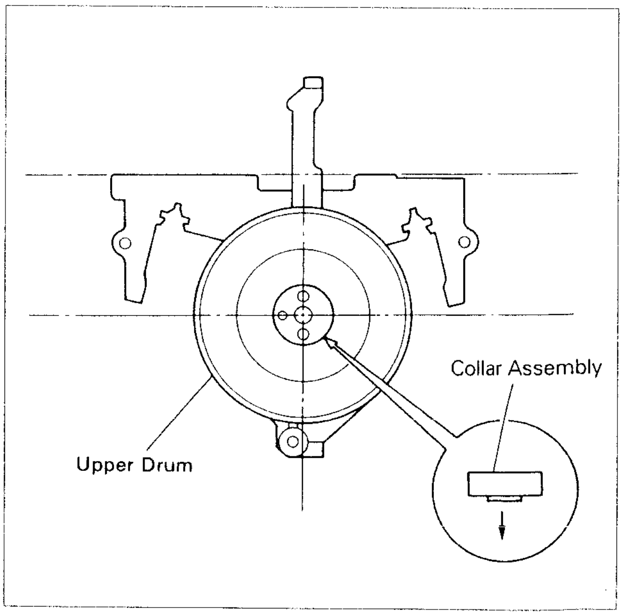

Collar Assembly
Upper Drum

Fig. 2-6-7 Collar assembly-1

4) While pressing the Collar Assembly evenly from above with the fingertips, secure the hexagonal screw.

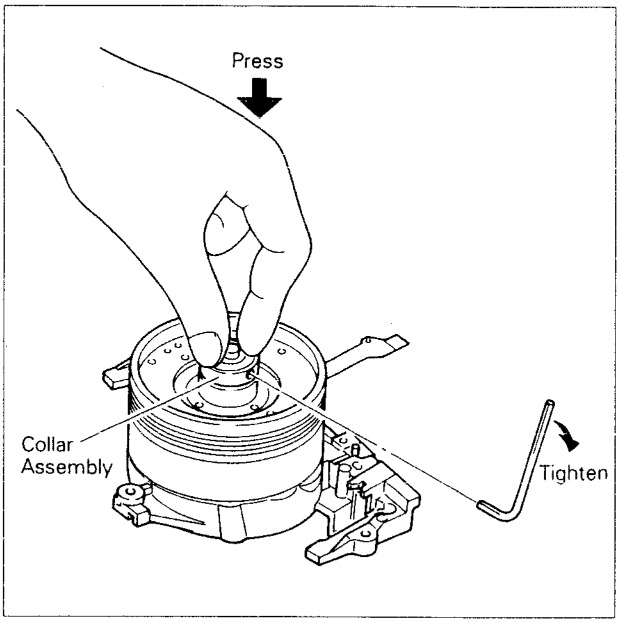

Press
Collar Assembly
Tighten

Fig. 2-6-8 Collar assembly-2

5) After installing, gently turn the Upper Drum by hand and confirm normal rotation.
6) Install the Rotor and Stator Assemblies.
7) Clean the Upper and Lower Drum Assemblies and perform the following adjustments;
   - Switching Point Adjustment
   - Interchangeability Adjustment (be sure to check LP mode)
   - Recording colour level Adjustment

2.6.5 A/C head

1. Removal

1) Take out 2 screws ① and remove the A/C head arm assembly.

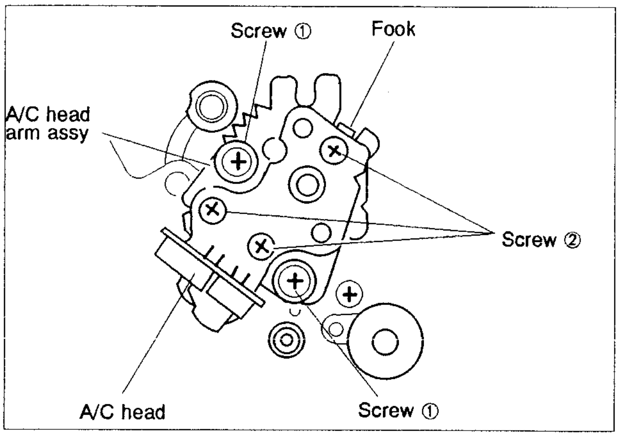

Screw ①
Fook
A/C head arm assy
Screw ②
A/C head
Screw ①

Fig. 2-6-9 A/C head replacement-1

2) When replace only A/C head. Remove 3 screws ②, use care not to misplace the 3 springs.

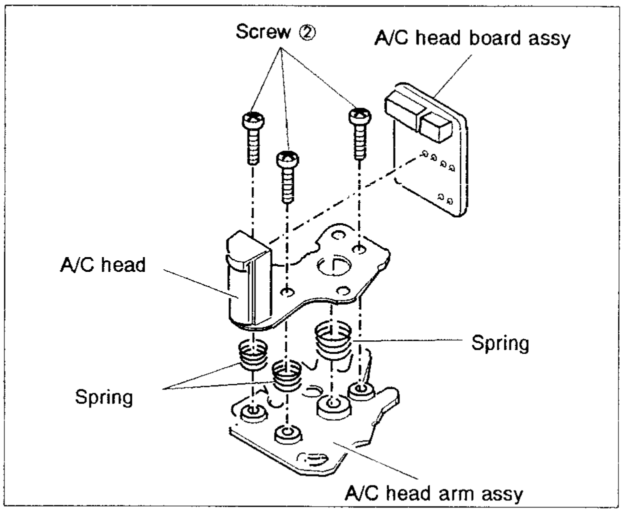

Screw ②
A/C head board assy
A/C head
Spring
Spring
A/C head arm assy

Fig. 2-6-10 A/C head replacement-2

2. Installation

1) Temporarily set the A/C head height as indicated in Fig. 2-6-11.

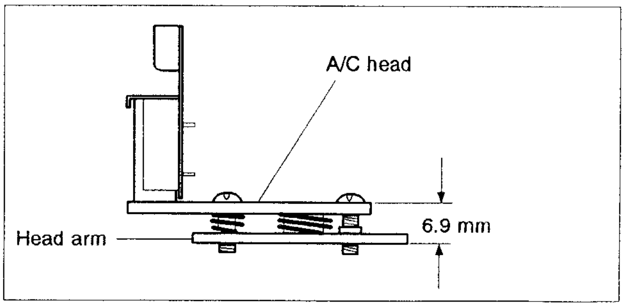

A/C head
Head arm
6.9 mm

Fig. 2-6-11 A/C head height

Notes:
- *It is very important to correctly adjust the control pulse and audio signal in addition to the mechanical tape path.*
- *Perform interchangeability adjustments after electrical adjustments.*

2.7 TAPE INTERCHANGEABILITY ADJUSTMENT

Note: *This adjustment is extremely important. However, it is normally not required during routine service. Perform only after replacing major components (A/C head, drum assembly, etc.).*

2.7.1 Tilt adjustment of A/C head

1) Use blank tape and set for playback.
2) Turn 1 screw ① clockwise to where the tape curls just slightly at the take-up guide pole bottom flange, as shown in Fig. 2-7-1.
3) Then slowly turn screw ① counter-clockwise to where the curling ceases.

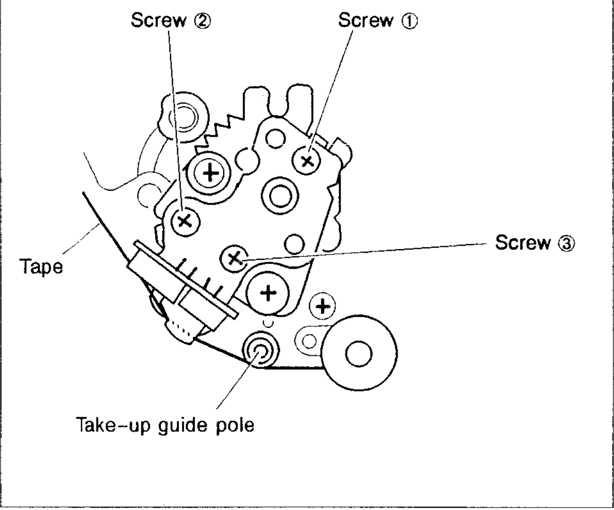


Fig. 2-7-1 A/C head tilt adjustment

2.7.2 Aximuth adjustment of A/C head

1) Connect the oscilloscope to the audio output jack on the rear of the deck.
2) Playback the stairstep portion (6 kHz, Mono) of the alignment tape.
3) Adjust 1 screw ② on the A/C head arm assembly in Fig. 2-7-1 so that the audio output is both maximum and with minimum fluctuation.

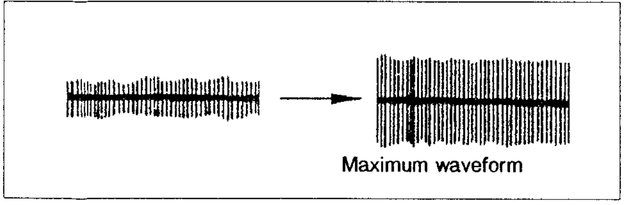


Fig. 2-7-2 A/C head azimuth adjustment

2.7.3 Height adjustment of A/C head

1) Playback the blank tape and observe the control head area.
2) Turn screws ①, ② and ③ by small and equal increments (about 45° at a time) to adjust the A/C head height for equal width can be seen, by both core erea as shown in Fig. 2-7-3 (upper core of the audio erase head and bottom core of the control head).
3) Confirm that the azimuth adjustment (2.7.2), if necessary adjustment it.

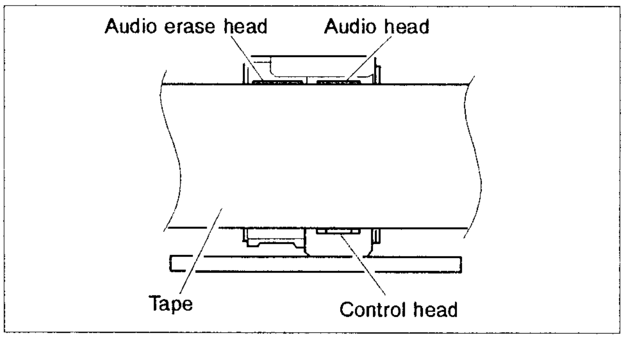


Fig. 2-7-3 A/C head height adjustment

2.7.4 Phase (X-value) adjustment of A/C head

1) Playback the stairstep portion of the alignment tape [MH-2].
2) Connect the oscilloscope to TP353 (PB FM) on the MAIN board. Use TP511 (DRUM FF) on the PRE/REC board as a trigger. Confirm that the FM waveform appears, as in Fig. 2-7-5.
3) Set the neutral manual tracking position, by simultaneously press of the (+) and (–) tracking buttons.
4) If adjustment is required, slightly loosen screws ④ and ⑤. Set A/C head positioning tool on the A/C head adjusting boss as shown in Fig. 2-7-4.
5) Turn the tool first to position the A/C head fully toward the capstan. Then gradually return it toward the durm and stop at the position of maximum FM waveform output level as shown in Fig. 2-7-5.
6) Tighten screw ⑤. Remove the tool and tighten screw ④.
7) Eject the tape and then re-insert alignment tape [MH-2L]. Playback the stairestep of the alignment tape. Set the neutral manual tracking position.
8) Confirm maximum playback FM waveform outut level sa shown in Fig. 2-7-5.
9) If not maximum, slightly loosen the screws ④ and ⑤ . Use the tool and adjust the head position for the nearest maximum point. Then tighten screws ④ and ⑤.

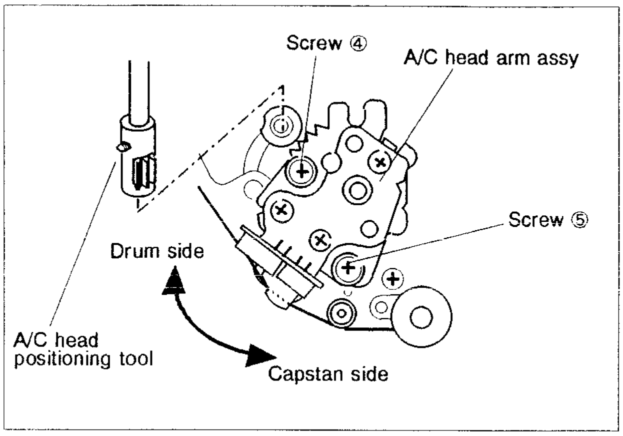


Fig. 2-7-4 A/C head phase adjustment-1

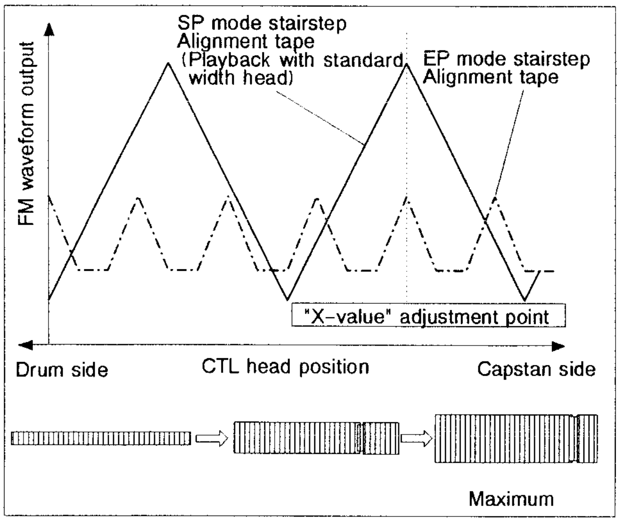


Fig. 2-7-5 A/C head phase adjustment-2

2.7.5 LP mode auto tracking

1) Playback the stairstep of the alignment tape [MH-2L].
2) Confirm that the A/V digital tracking LED changes coming on from flickering.
3) Press the "D" button of the preseting unit [PTU94008] to turn off the A/V digital tracking LED.
4) Press the "D" button again to change the mode to the LP interchangeability adjustment mode and confirm that the A/V digital tracking LED changes to coming out from flickering.

Note: *When the MH-2L alignment tape is automatically ejected from the cassette housing, repeat the above adjustment (phase adjustment of A/C head, sec. 2.7.4).*

2.7.6 Tension pole position

1) Turn the eccentric adjust pin to align the notch of the pin with the mark as shown in Fig. 2-7-6.
2) Set the cassette housing assembly. Use the back tension cassette gauge and set for the playback mode.
3) Confirm reading of 35 to 48 g•cm.

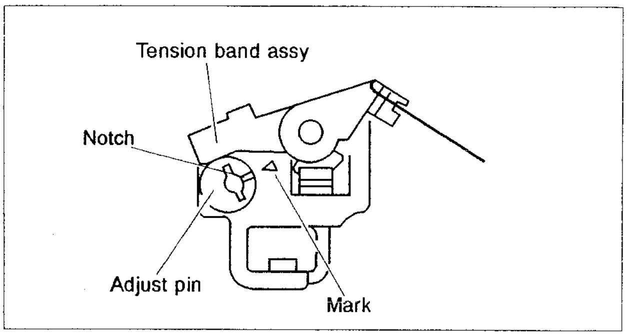


Fig. 2-7-6 Tension pole position

2.7.7 Clutch assembly adjustment

1) Remove cassette housing and se for playback mode (Refer to sec. 2.1.2).
2) Set torque gauge on the take-up reel disk. Gradually relax your grip on the gauge and read the needle indication at the point the gauge begins to rotate with the disk. Confirm indication of 60 to 100 g•cm.

2.7.8 SUP/TU pole base adjustment

This is the most important adjustment. If incorrect, proper tracking will not be obtained in recording and playback.
Other problems that may occur are noise in parts of the picture, poor colour reproduction and picture instability.

1) Playback the stairstep portion of the alignment tape [MH-2].
2) Connect the oscilloscope to TP353 (PB FM) on the MAIN board. Use TP511 (DRUM FF) on the PRE/REC board as a trigger. Confirm that the RF envelope appears, as in Fig. 2-5-9.
3) Operate the tracking adjustment (press the tracking buttons during playback) and set for maximum playback RF envelope waveform.
4) If adjustment is required, first slightly loosen the set screw located at the bottom of the guide rollers. Using the guide roller adjustment tool, adjust the supply and take-up guide rollers (refer to Fig. 2-7-8) to obtain the correct waveform. Refer to Fig. 2-7-9.

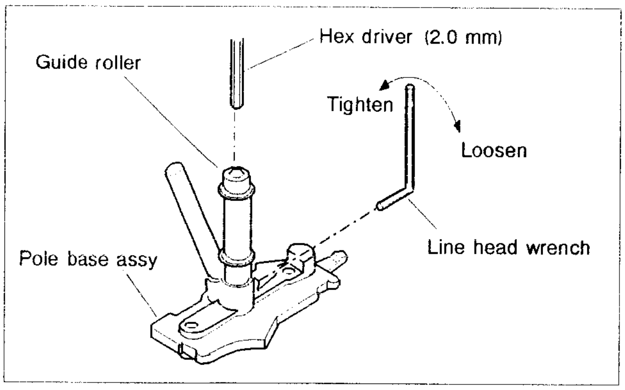

Hex driver (2.0 mm)
Guide roller
Tighten
Loosen
Line head wrench
Pole base assy

Fig. 2-7-8 SUP/TU pole base assembly

5) By pushing the tracking buttons several times, vary the FM waveform output from maximum to minimum (and vice versa) gradually, and confirm that the variation proceeds in a flat shape, as in Fig. 2-7-10.
6) If the FM waveform varies and is not mostly flat, tweak the height of guide roller(s) until the RF waveform is as flat as possible.
7) Eject a tape and then playback tape again, since the height of guide rollers may move during adjustment. Confirm, when pushing the tracking (+) and (-) buttons, FM waveform variation is always flat.

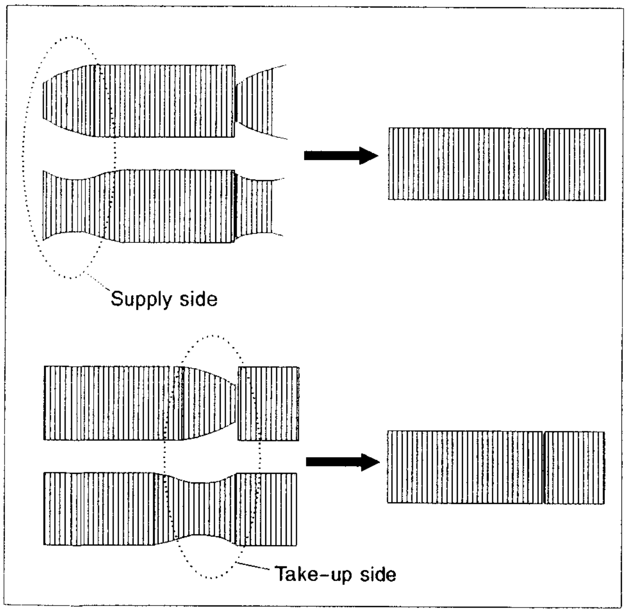

Supply side
Take-up side

Fig. 2-7-9 FM waveform -1

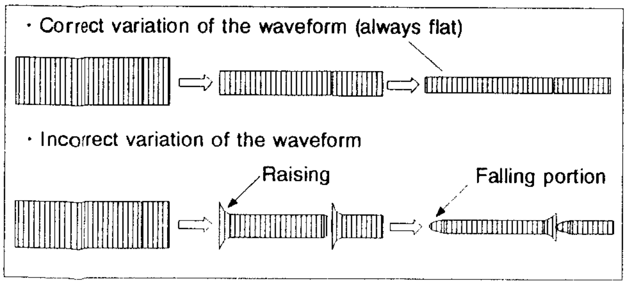

· Correct variation of the waveform (always flat)
· Incorrect variation of the waveform
Raising
Falling portion

Fig. 2-7-10 FM waveform -2

2.7.9 Tape transport system confirmation

1) Use a 140-minute or more long tape and check at the tepe beginning and ending portion according to the following steps.
2) Confirm absence of curling, wrinkling, slippage, etc at the (a), (b), (c) and (d) portions, as shown in Fig. 2-7-11.
3) If curling or winkling are observed during the above checks, perform the steps 2.7.1 to 2.7.8.

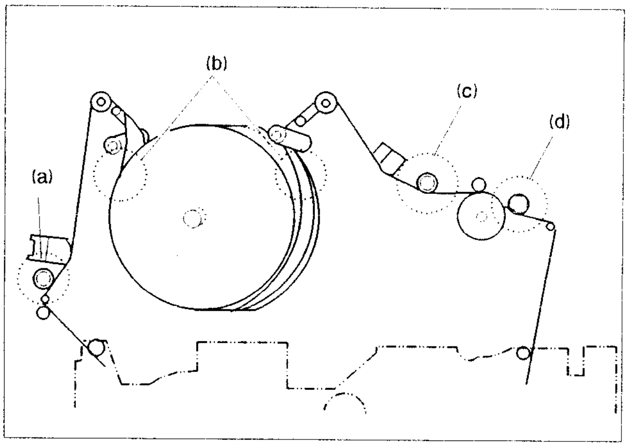


Fig. 2-7-11 Tape transport system

SECTION 3
ELECTRICAL ADJUSTMENT

3.1 DECK SECTION ADJUSTMENT

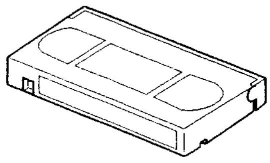
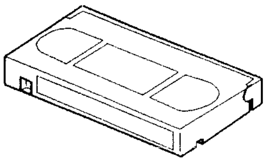
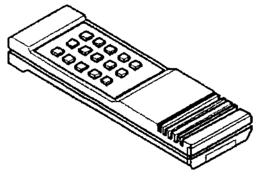
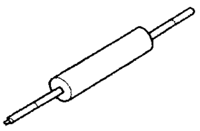
3.1.1 PRECAUTION

Electrical adjustments are required after replacing circuit components and certain mechanical parts. It is important to perform these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipments is available.

1. Required test equipment

1. Colour television or monitor
2. Osciloscope: wide-band, dual-trace, triggered delayed sweep
3. Frequency counter
4. Digital voltmeter
5. Signal generator: RF/IF sweep/maker
6. Signal generator: PAL colour bar, stairstep
7. Recording tape

2. Required adjustment tools

Alignment tape (SP) MH-2	Alignment tape (LP) MH-2L
	
Presetting unit PTU94008	Adjustment driver YTU93004-2
	
*SMC replacement tools YTU94038C	

***Note:** *It is convenient for replacing chip parts.*

Table 3-1-1 Required adjustment tools

3. Colour bar signal, colour bar pattern and video sweep signal

- Colour bar signal of pattern generator

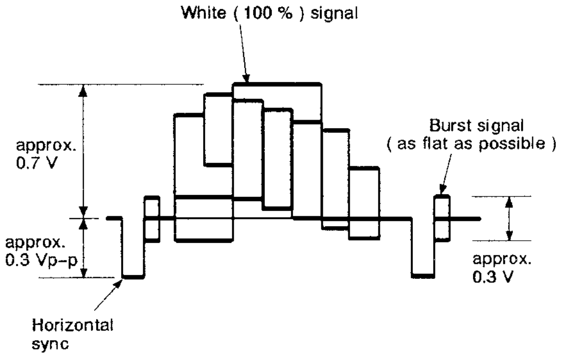

White (100 %) signal
approx.
0.7 V
Burst signal
(as flat as possible)
approx.
0.3 Vp-p
approx.
0.3 V
Horizontal
sync

Fig. 3-1-1 Colour bar signal of pattern generator

- Colour bar signal

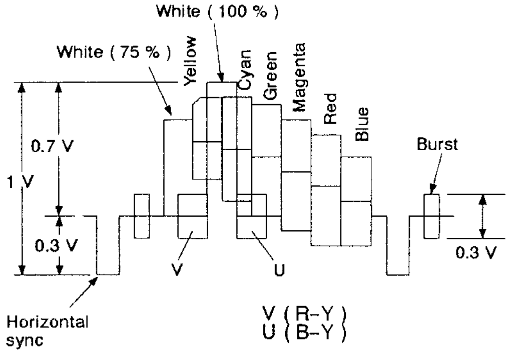

White (100 %)
White (75 %)
Yellow
Cyan
Green
Magenta
Red
Blue
0.7 V
1 V
0.3 V
Burst
0.3 V
V
U
Horizontal
sync
V (R-Y)
U (B-Y)

Fig. 3-1-2 Colour bar signal waveform

- Colour bar pattern

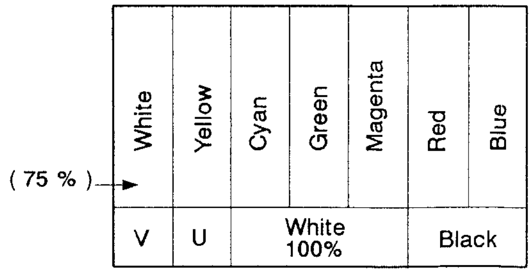

White
Yellow
Cyan
Green
Magenta
Red
Blue
(75 %)
V
U
White
100%
Black

Fig. 3-1-3 Colour bar pattern

- Video sweep signal

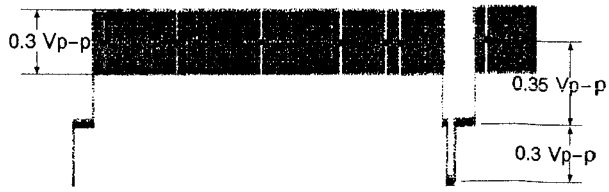

0.3 Vp-p
0.35 Vp-p
0.3 Vp-p

Fig. 3-1-4 Video sweep signal

3.1.2 SERVO CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the MAIN BOARD.*

1. PB switching point

Signal	•Alignment tape (MH-2) •Stairstep
Mode	•PB •Digital tracking OFF
Equipment	•Oscilloscope
Measurement point	•TP210 (VIDEO OUT)
Trigger slope (-)	•TP511 (DRUM FF) 〔PRE/REC AMP BOARD〕
Adjustment tool	•Presetting unit [PTU94008]
Specification	•6.5 ± 0.5 H

Note: *Use only buttons "E" and "F". Deplessing other buttons during adjustment may cause adjustment errors.*

1) Connect an oscilloscope to TP210 and external trigger from TP511 (negative slope).
2) Playback the stairstep signal of the alignment tape.
3) Set the tracking control to the center position by simultaneously pressing the (+) and (-) buttons.
4) Adjust by pressing "E" (+) or "F" (-) buttons of presetting unit for position the trigger point 6.5 ± 0.5 H from V.sync.

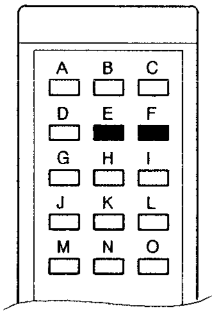


Fig. 3-1-5 Presetting unit

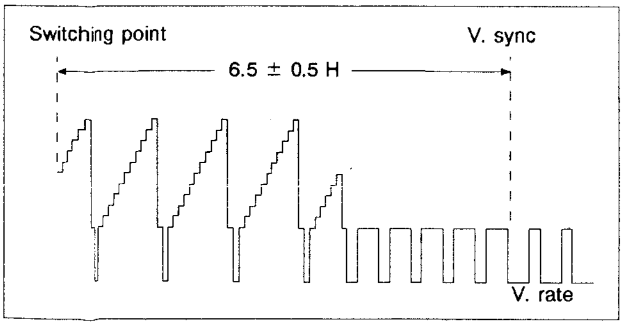


Fig. 3-1-6 PB switching point

2. Slow tracking preset

Signal	•Colour bar
Mode	•SP/LP •REC → PB (SLOW) •Digital tracking OFF
Equipment	•TV-Monitor
Adjustment tool	•Presetting unit [PTU94008]
Specification	•Mimimum noise

Note: *Set VCR to the mode A by remote controller.*

1) Record a colour bar signal in the SP mode.
2) Playback recorded signal on the FWD slow mode.
3) Set the tracking control to the centre position by simultaneously pressing the (+) and (-) buttons.
4) Observe the display on a TV monitor and adjust for optimum noise condition (best tracking) by depressing "C" (+) or "B" (-) buttons of presetting unit as required.
5) Depress the STOP button.
6) Confirm that the bar noise is not visible on the monitor in the slow mode.
7) Repeat steps 2) to 6) in REV slow mode.
8) Repeat steps 1) to 7) in LP mode.

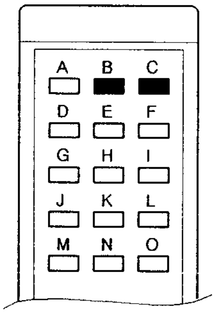


Fig. 3-1-7 Presetting unit

3.1.3 VIDEO CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the VIDEO UNIT BOARD.*

Important:

Item 1. thru 6..

1) Ordinarily performing these adjustments is not required. Adjustments should be performed only if IC2 on the VIDEO UNIT BOARD has been replaced.
2) To adjust, replace fixed resistor with variable chip resistor, then adjust as required.

1. EE Y level

Signal	•Colour bar
Mode	•EE
Equipment	•Oscilloscope
Measurement point	•CN3 pin 10 (VIDEO OUT)
Adjustment part	•R42 (EE Y LEVEL)
Specification	•2.00 ± 0.06 Vp-p (Unterminated)

1) Connect an oscilloscope to CN3 pin 10.
2) Confirm that Y level is 2.00 ± 0.06 Vp-p. Unterminated.
3) If necessary, replace R42 with the variable chip resistor NVP1301-153N and adjust it for 2.00 ± 0.06 Vp-p, as in Fig. 3-1-8.

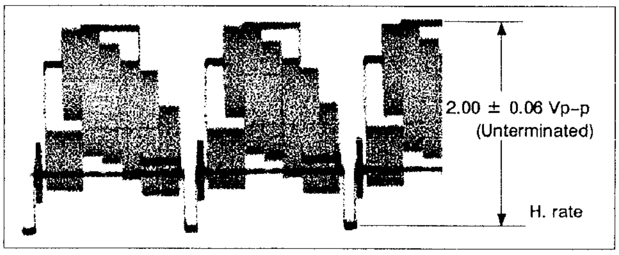


Fig. 3-1-8 EE Y level

2. White clip

Signal	•Colour bar
Mode	•EE
Equipment	•Oscilloscope
Measurement point	•IC2 pin 22
Adjustment part	•R45 (W/D CLIP)
Specification	•WHITE CLIP : 190 ± 4 % •DARK CLIP : 145 ± 8 %

1) Connect an oscilloscope to IC2 pin 22.
2) Confirm that white clip is 190 ± 4 % and dark clip is 145 ± 8 %.
3) If necessary, replace R45 with the variable chip resistor NVP1301-103N and adjust it 190 ± 4 % white clip and 145 ± 8 % dark clip, as in Fig. 3-1-9.

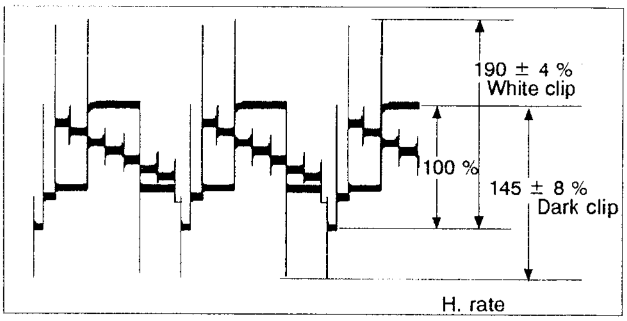


Fig. 3-1-9 White clip

3. Carrier & deviation

• Carrier

Signal	•No signal-VIDEO INPUT (Shorted RCA Phono Plug)
Mode	•EE
Equipment	•Frequency counter
Measurement point	•CN2 pin 5 (REC FM)
Adjustment part	•R28 (CARRIER)
Specification	•3.80 MHz ± 40 kHz

1) Connect a frequency counter to CN2 pin 5.
2) Confirm that frequency is 3.80 MHz ± 40 kHz.
3) If necessary, replace R28 with the variable chip resistor NVP1301-223N and adjust it for 3.80 MHz ± 40 kHz.

• Deviation

Signal	•Colour bar
Mode	•REC then PB
Equipment	•Oscilloscope
Measurement point	•CN3 pin 10 (VIDEO OUT)
Adjustment part	•R29 (DEVIATION)
Specification	•2.00 ± 0.06 Vp-p (Unterminated)

4) Record and playback a colour bar signal.
5) Confirm that Y level is 2.00 ± 0.06 Vp-p unterminated.
6) If necessary, replace R29 with the variable chip resistor NVP1301-103N and adjust it for 2.00 ± 0.06 Vp-p, as in Fig. 3-1-10.

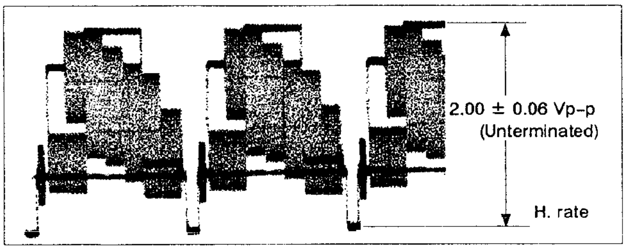


Fig. 3-1-10 Carrier & deviation

4. YNR level

Signal	•Colour bar
Mode	•EE
Equipment	•Oscilloscope
Measurement point	•IC2 pin 9
Adjustment part	•R18 (N.C. BALANCE)
Specification	•Mimimum DC step difference

1) Connect an oscilloscope to IC2 pin 9.
2) Confirm that DC step difference is minimum.
3) If necessary, replace R18 with the variable resistor NVP1301-152N and adjust it for minimum DC step difference, as in Fig. 3-1-11.

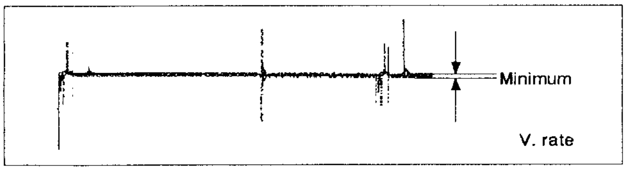


Fig. 3-1-11 YNR level

5. PB Y level

Signal	•Colour bar
Mode	•SP •REC then PB
Equipment	•Oscilloscope
Measurement point	•CN3 pin 10 (VIDEO OUT)
Adjustment part	•R25 (PB Y LEVEL)
Specification	•2.00 ± 0.06 Vp-p (Unterminated)

Note: *Confirm that procedure 3.1.4-2. is correct before performing this adjustment procedure.*

1) Connect an oscilloscope to CN3 pin 10.
2) Record and playbck a colour bar signal.
3) Confirm that Y level is 2.00 ± 0.06 Vp-p unterminated.
4) If necessary, replace R25 with the variable resistor NVP1301-472N and adjust for 2.00 ± 0.06 Vp-p, as in Fig. 3-1-12.

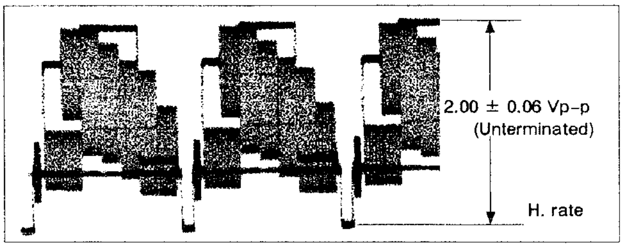


Fig. 3-1-12 PB Y level

6. REC colour level

Signal	•Colour bar
Mode	•SP •REC
Equipment	•Oscilloscope
Measurement point	•CN2 pin 11 (REC COLOUR)
Adjustment part	•R52 (REC COLOUR LEVEL)
Specification	•200 ± 10 mVp-p

1) Connect an oscilloscope to CN2 pin 11.
2) Record the colour bar signal in SP mode.
3) Confirm that colour level is 200 ± 10 mV p-p, as in Fig. 3-1-13.
4) If necessary, replace R52 with the variable resistor NVP1301-222N and adjust it for 200 ± 10 mVp-p.

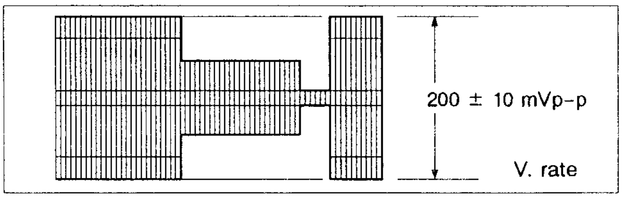


Fig. 3-1-13 REC colour level

3.1.4 TIMER CIRUCIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the MAIN BOARD.*

1. Timer clock

Signal	•No signal
Mode	•EE •AUX
Equipment	•Frequency counter
Measurement point	•IC601 pin 64
Adjustment part	•C619 (TIMER CLOCK)
Specification	•1024.005 ± 0.001 Hz (976.5577 ± 0.0010 μ sec)

1) Connect a frequency counter to IC601 pin 64 and GND.
2) Short IC601 pin 34 to IC601 pin 63.
3) Short the lead's capacitor C602 once in order to reset IC601.
4) Adjust C619 for 1024.005 ± 0.001 Hz (976.5577 ± 0.0010 μ sec).
5) Disconnect a short wire.

3.1.5 AUDIO CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the AUDIO UNIT BOARD.*

Important:

Item 1. and 2..

1) Ordinarily performing these adjustments is not required. Adjustments should be performed only if IC1 on the AUDIO UNIT BOARD has been replaced.
2) To adjust, replace fixed resistor with variable chip resistor, then adjust as required.

1. Carrier frequency adjustment

Signal	•No signal
Mode	•EE •NTSC mode
Equipment	•Frequency counter
Measurement point	•IC1 pin 21 (REC FM L) •IC1 pin 43 (REC FM R)
Adjustment part	•R11 (L CARRIER) •R25 (R CARRIER)
Specification	•1.4 MHz ± 5 kHz : R11 •1.8 MHz ± 5 kHz : R25

1) Connect the frequency counter to IC1 pin 21 and GND.
2) Confirm that frequency is 1.4 MHz ± 5 kHz.
3) If necessary, replace R11 with the variable resistor NVP1301-153N and adjust it for 1.4 MHz ± 5 kHz.
4) Connect the frequency counter to IC1 pin 43 and GND.
5) Confirm that frequency is 1.8 MHz ± 5 kHz.
6) If necessary, replace R25 with the variable resistor NVP1301-153N and adjust it for 1.8 MHz ± 5 kHz.

2. Hi-Fi playback audio level

Signal	•Audio 1 kHz (-8 dBs)
Mode	•REC → PB
Equipment	•Audio oscillator •AC millivoltmeter
Measurement point	•Audio out (L ch) •Audio out (R ch)
Adjustment part	•R5 (L DEVIATION) •R30 (R DEVIATION)
Specification	•-8 dBs (0.9 Vp-p, 0.32 Vrms)

1) Connect an audio oscillator to audio input (left channel).
2) Record and playback an audio signal.
3) Confirm that output level is -8 dBs (0.9 Vp-p, 0.32 Vrms).
4) If necessary, replace R5 with the variable resistor NVP1301-473N and adjust it for 18 dBs (0.9 Vp-p, 0.32 Vrms).
5) Connect an audio oscillator to audio input (right channel).
6) Record and playback an audio signal.
7) Confirm that out put level is -8 dBs (0.9 Vp-p, 0.32 Vrms).
8) If necessary, replace R30 with the variable resistor NVP1301-473N and adjust it for -8 dBs (0.9 Vp-p, 0.32 Vrms).

3.1.6 TUNER CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the IF UNIT BOARD.*

1. RF AGC

Note: *Before the following adjustment,*

1) Connect a cable to ANT IN and terminate TV OUT with 75 ohms.

2) Set a TV channel signal generator as follows.

Video: 65 dBμ 75 Ω, colour bar 87.5 % modulation.

Audio: 55 dBμ 75 Ω, 1 kHz ± 50 kHz deviation.

〈Factory Method〉

Signal	•TV broadcasting
Mode	•Tuner
Equipment	•Oscilloscope •TV signal generator
Measurement point	•IF UNIT
Adjustment part	•IF VR
Specification	•-8.0 ± 1.0 dB from maximum level (with minimum noise)

1) Connect an oscilloscope to IF terminal of U/V tuner (front end).
2) Adjust IF VR for maximum level, then adjust IF VR to reduce the IF level -8.0 dB from maximum level.

《Alternate Method》

Note: *Adjust IF VR (RF AGC) to correct for excess noise in the picture or when streaks cross interference occurs due to strong electrical fields.*

1) Adjust IF VR to minimize noise or streaks on the TV screen.
2) Adjust for noisy picture with strong signal. Then adjust until noise just disappears. Select other channels to confirm proper pick-up of channels.

SECTION 4
CHARTS AND DIAGRAMS

SCHEMATIC DIAGRAM NOTES

Safety precautions

The Components identified by the symbol ⚠ are critical for safety. For continued safety, replace safety critical components only with manufactures recommended parts.

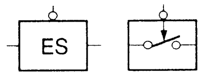
1. Schematic diagram values

Unless otherwise specified.

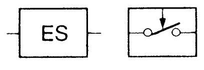
1) All resistance values are in ohms. 1/6 W, 1/8 W (refer to parts list).
   Chip resistors are 1/16 W.
   K: KΩ (1000Ω), M: MΩ (1000KΩ)
2) All capacitance values are in μF, (P: PF).
3) All inductance values in μH, (m: mH).
4) All diodes are 1SS133 or MA165, (refer to parts list).

2. Indications

AUX : Active only at high.
$\overline{\text{AUX}}$: Active only at low.

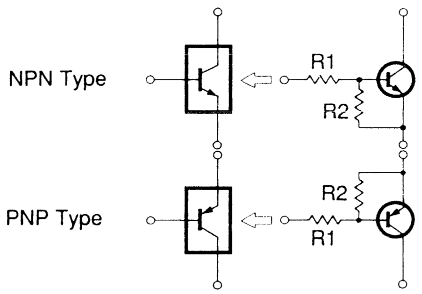


Active only at low for electronic switch.

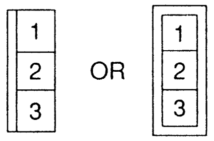


Active only at high for electronic switch.

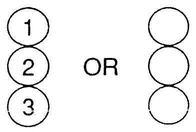
Digital transistor :
The digital transistor includes built in resistors.
It features small size and high reliability.


NPN Type
R1
R2
PNP Type
R2
R1

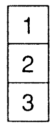
3. Interpreting Connector indications



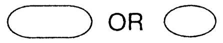
Removable connector



Direct connection on board



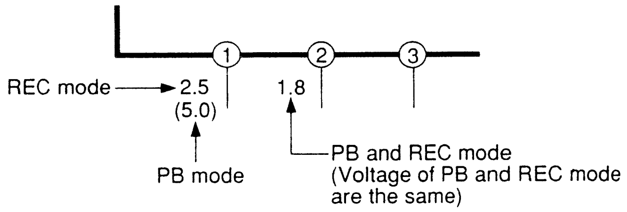
Non-removable Board connector



Connected pattern on board

4. Voltage measurement

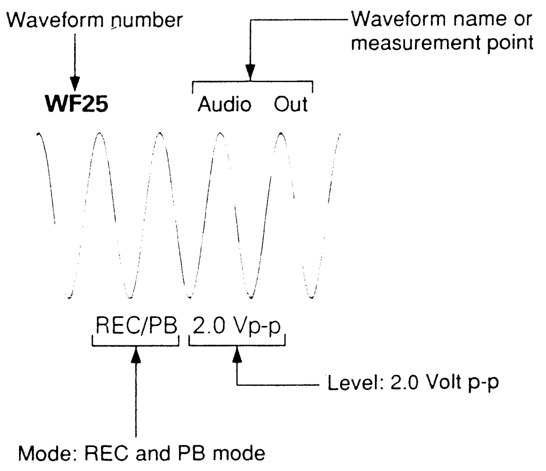
1) Voltage chart
   REC : Color bar signal in SP mode, normal VHS mode.
   PB : Alignment tape, color bar SP mode, normal VHS mode.
   — : Unmeasurable or unnecessary to measure.
2) Audio section
   REC : 1KHz, –8 dBs sine wave signal in SP mode, Normal VHS mode.
   PB : REC then playback it.
3) Movie Camera Section
   Measured as the grey scale pattern and color bar pattern which lighted up brightly is shot in the E-E mode.
4) Schematic diagram
   Voltage Indications for REC and PB mode on Schematic are as shown below.


1
2
3
REC mode
2.5
(5.0)
1.8
PB mode
PB and REC mode
(Voltage of PB and REC mode are the same)

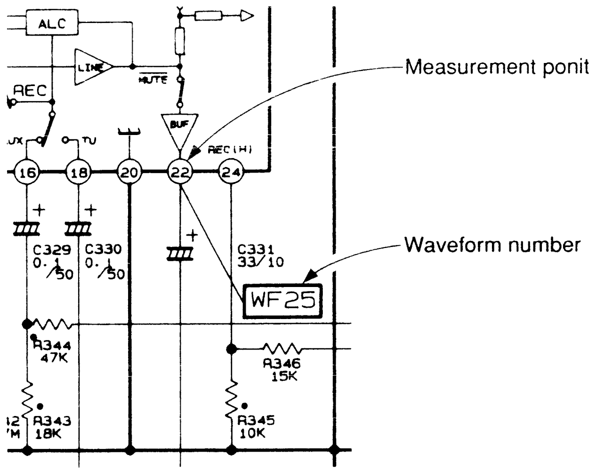
5. Waveform measurement

1) Waveform chart
   REC : Color bar signal in SP mode, normal VHS mode.
   PB : Alignment tape, color bar SP mode, normal VHS mode.
2) Audio Section
   REC : 1KHz, –8 dBs sine wave signal in SP mode, normal VHS mode.
   PB : REC then playback it.
3) Movie Camera Section
   Measured as the grey scale or color bar pattern which lighted up brightly is shot in the E-E mode.

Example:


Waveform number
Waveform name or measurement point
WF25
Audio Out
REC/PB 2.0 Vp-p
Level: 2.0 Volt p-p
Mode: REC and PB mode

4) Schematic diagram
   Waveform indications on schematic are as shown below


ALC
LINE
MUTE
BUF
REC
TU
REC(H)
16
18
20
22
24
C329
0.1/50
C330
0.1/50
C331
33/10
WF25
R344
47K
R343
18K
R346
15K
R345
10K
Measurement ponit
Waveform number

6. Signal path Symbols

The arrows indicate the signal path as follows.

⇨	Playback signal path
▭▶	Playback and recording signal path
➡	Recording signal path (including E-E signal path)
▬▷	Y signal path
⇨▷	Color (Chroma) signal path
▭▶▷	R or R-Y signal path
➡▷	B or B-Y signal path
⇨▶	Capstan servo path
▭▶▶	Drum servo path
➡▶	Reel servo path

CIRCUIT BOARD NOTES

1. Color indications

1) Foil side :
   Foil side patterns are indicated at gray shading.
2) Component side :
   Component side patterns are indicated at RED shading.

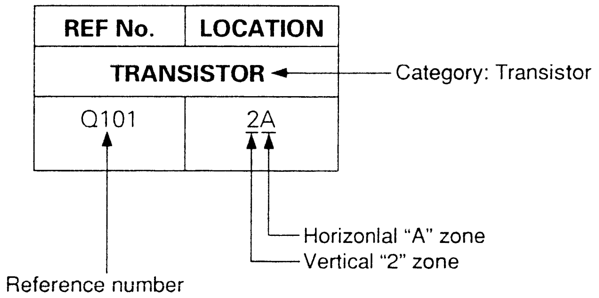
Notes:

Foil side (B side) ;
Parts on the foil side seen from foil face (pattern face) are indicated.

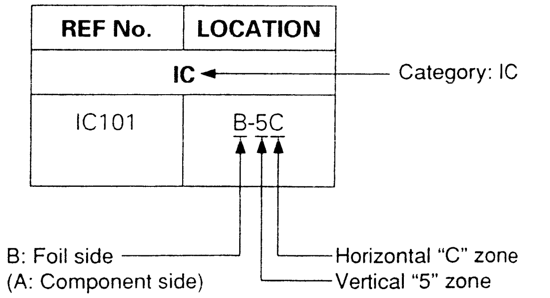
Component side (A side) ;
Parts on the component side seen from component face (parts face) are indicated.

2. Location of SMC indications

1) Single pattern :


REF No.
LOCATION
TRANSISTOR
Q101
2A
Category: Transistor
Horizonlal "A" zone
Vertical "2" zone
Reference number

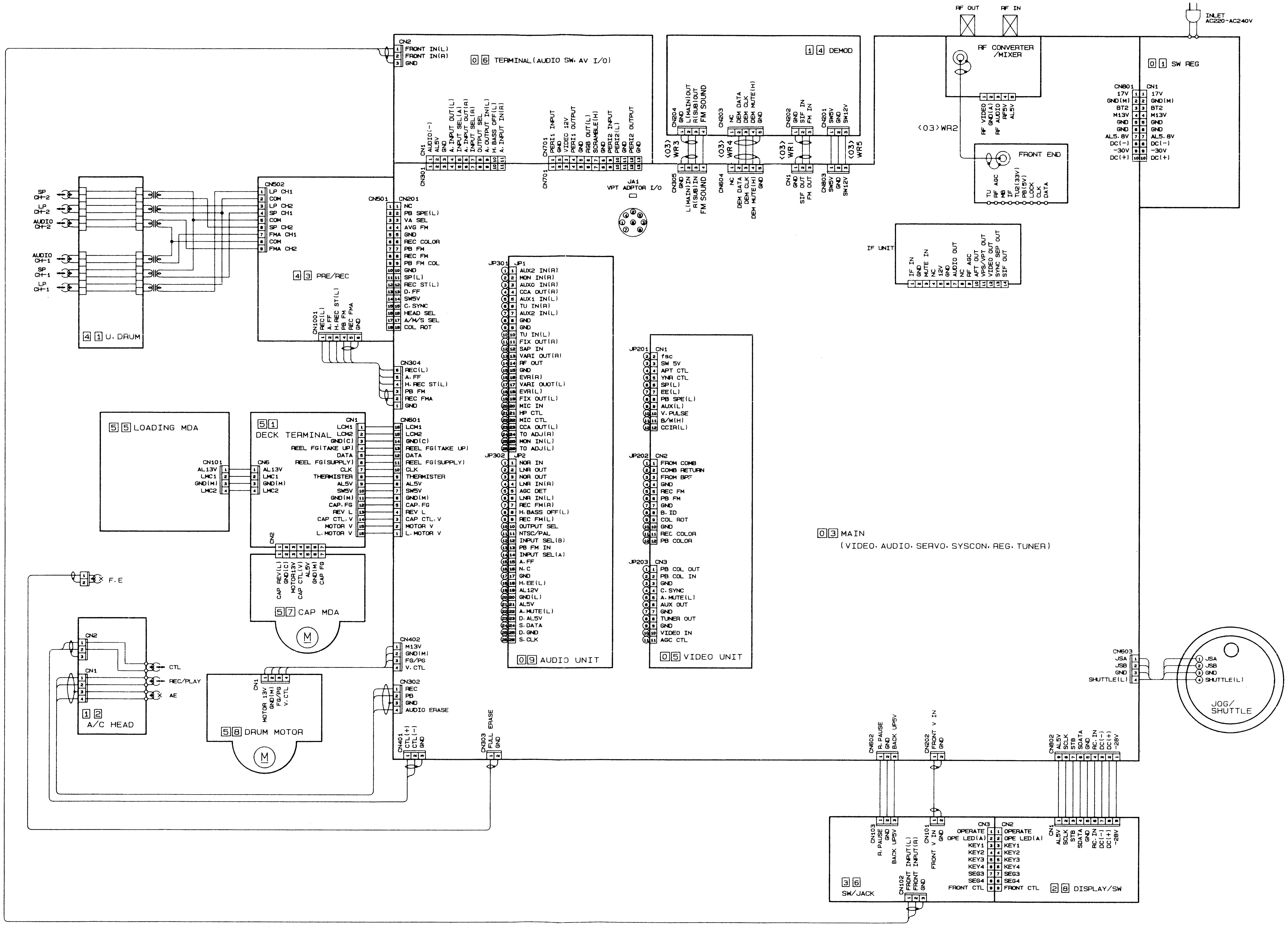
2) Double pattern :


REF No.
LOCATION
IC
IC101
B-5C
Category: IC
B: Foil side
(A: Component side)
Horizontal "C" zone
Vertical "5" zone

Notes:

1) **For general information in service manual, please refer to the Service Manual of GENERAL INFORMATION No. 82054C (May 1991).**
2) **For repairing SMC (Surface Mounted Components), please refer to the VIDEO SERVICE GUIDE No. VTS81001.**

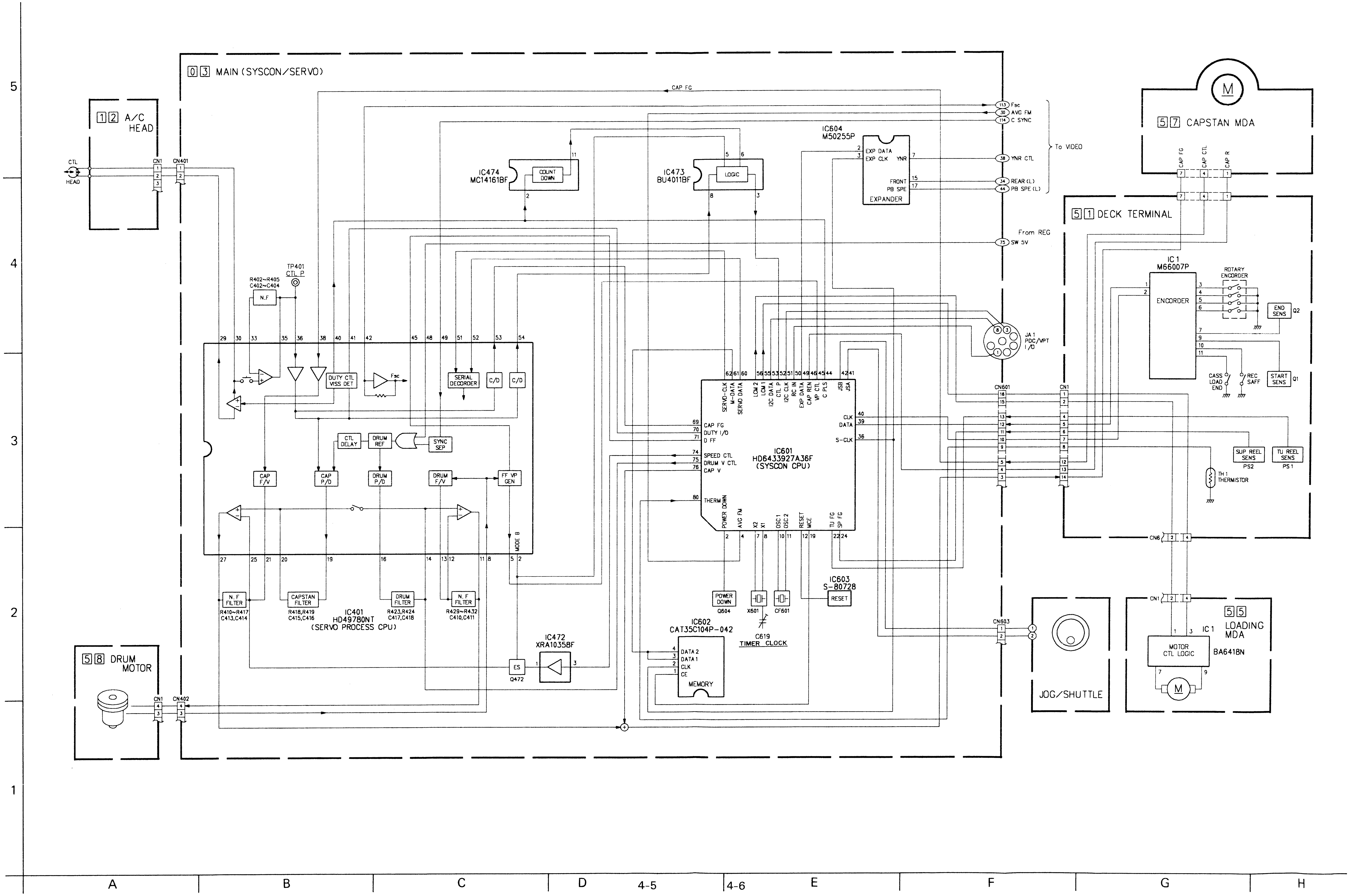
4.1 BOARD INTERCONNECTIONS


0 6 TERMINAL (AUDIO SW. AV I/O)
CN2
1 FRONT IN(L)
2 FRONT IN(R)
3 GND
CN1
AUDIO(-)
AL5V
GND
A.INPUT OUT(L)
INPUT SEL(A)
A.INPUT OUT(R)
INPUT SEL(R)
OUTPUT SEL
A.OUTPUT IN(L)
H.BASS OFF(L)
A.INPUT IN(R)
CN301
CN701
PERI1 INPUT
GND
VIDEO 12V
PERI1 OUTPUT
GND
RGB OUT(L)
SCRAMBLE(H)
GND
PERI2 INPUT
PERI2(L)
GND
PERI2 OUTPUT
GND
JA1
VPT ADPTOR I/O
1 4 DEMOD
CN204
GND
L(MAIN)OUT
R(SUB)OUT
FM SOUND
〈03〉 WR3
CN305
GND
L(MAIN)IN
R(SUB)IN
FM SOUND
CN203
NC
DEM DATA
DEM CLK
DEM MUTE(H)
GND
〈03〉 WR4
CN604
NC
DEM DATA
DEM CLK
DEM MUTE(H)
GND
CN202
GND
SIF IN
FM IN
〈03〉 WR1
CN1
GND
SIF OUT
FM OUT
CN201
SW5V
GND
SW12V
〈03〉 WR5
CN803
SW5V
GND
SW12V
RF OUT
RF IN
RF CONVERTER /MIXER
RF VIDEO
GND(A)
RF AUDIO
RF5V
AL5V
〈03〉WR2
FRONT END
TU
RF AGC
MB
IF
TU2(33V)
PB(5V)
LOCK
CLK
DATA
INLET AC220~AC240V
0 1 SW REG
CN801
CN1
17V
GND(M)
BT2
M13V
GND
GND
AL5.8V
DC(-)
-30V
DC(+)
IF UNIT
IF IN
GND
MUTE IN
NC
12V
GND
AUDIO OUT
NC
RF AGC
AFT OUT
VPS/VPT OUT
VIDEO OUT
SYNC SEP OUT
SIF OUT
SP CH-2
LP CH-2
AUDIO CH-2
AUDIO CH-1
SP CH-1
LP CH-1
4 1 U. DRUM
CN502
1 LP CH1
2 COM
3 LP CH2
4 SP CH1
5 COM
6 SP CH2
7 FMA CH1
8 COM
9 FMA CH2
4 3 PRE/REC
CN1001
REC(L)
A.FF
H.REC ST(L)
PB FM
REC FMA
GND
CN501
CN201
1 NC
2 PB SPE(L)
3 VA SEL
4 AVG FM
5 GND
6 REC COLOR
7 PB FM
8 REC FM
9 PB FM COL
10 GND
11 SP(L)
12 REC ST(L)
13 D.FF
14 SW5V
15 C.SYNC
16 HEAD SEL
17 A/M/S SEL
18 COL ROT
CN304
6 REC(L)
5 A.FF
4 H.REC ST(L)
3 PB FM
2 REC FMA
1 GND
5 5 LOADING MDA
CN101
1 AL13V
2 LMC1
3 GND(M)
4 LMC2
5 1 DECK TERMINAL
CN6
1 AL13V
2 LMC1
3 GND(M)
4 LMC2
CN1
1 LCM1
2 LCM2
3 GND(C)
4 REEL FG(TAKE UP)
5 DATA
6 REEL FG(SUPPLY)
7 CLK
8 THERMISTER
9 AL5V
10 SW5V
11 GND(M)
12 CAP.FG
13 REV L
14 CAP CTL.V
15 MOTOR V
16 L.MOTOR V
CN601
16 LCM1
15 LCM2
14 GND(C)
13 REEL FG(TAKE UP)
12 DATA
11 REEL FG(SUPPLY)
10 CLK
9 THERMISTER
8 AL5V
7 SW5V
6 GND(M)
5 CAP.FG
4 REV L
3 CAP CTL.V
2 MOTOR V
1 L.MOTOR V
CN2
CAP REV(L)
GND(C)
MOTOR13V
CAP CTL(V)
AL5V
GND(M)
CAP FG
5 7 CAP MDA
M
F.E
CN2
CN1
CTL
REC/PLAY
AE
1 2 A/C HEAD
CN1
MOTOR 13V
GND(M)
FG/PG
V.CTL
5 8 DRUM MOTOR
M
CN402
1 M13V
2 GND(M)
3 FG/PG
4 V.CTL
CN302
1 REC
2 PB
3 GND
4 AUDIO ERASE
CN401
CTL(+)
CTL(-)
GND
CN303
FULL ERASE
GND
JP301
JP1
1 AUX2 IN(R)
2 MON IN(R)
3 AUXO IN(R)
4 CCA OUT(R)
5 AUX1 IN(L)
6 TU IN(R)
7 AUX2 IN(L)
8 GND
9 GND
10 TU IN(L)
11 FIX OUT(R)
12 SAP IN
13 VARI OUT(R)
14 RF OUT
15 GND
16 EVR(R)
17 VARI OUOT(L)
18 EVR(L)
19 FIX OUT(L)
20 MIC IN
21 HP CTL
22 MIC CTL
23 CCA OUT(L)
24 TO ADJ(R)
25 MON IN(L)
26 TO ADJ(L)
JP302
JP2
1 NOR IN
2 LNR OUT
3 NOR OUT
4 LNR IN(R)
5 AGC DET
6 LNR IN(L)
7 REC FM(R)
8 H.BASS OFF(L)
9 REC FM(L)
10 OUTPUT SEL
11 NTSC/PAL
12 INPUT SEL(B)
13 PB FM IN
14 INPUT SEL(A)
15 A.FF
16 N.C
17 GND
18 H.EE(L)
19 AL12V
20 GND(L)
21 AL5V
22 A.MUTE(L)
23 D.AL5V
24 S.DATA
25 D.GND
26 S.CLK
0 9 AUDIO UNIT
JP201
CN1
2 fsc
3 SW 5V
4 APT CTL
5 YNR CTL
6 SP(L)
7 EE(L)
8 PB SPE(L)
9 AUX(L)
10 V.PULSE
11 B/W(H)
12 CCIR(L)
JP202
CN2
1 FROM COMB
2 COMB RETURN
3 FROM BPF
4 GND
5 REC FM
6 PB FM
7 GND
8 B.ID
9 COL ROT
10 GND
11 REC COLOR
12 PB COLOR
JP203
CN3
1 PB COL OUT
2 PB COL IN
3 GND
4 C.SYNC
5 A.MUTE(L)
6 AUX OUT
7 GND
8 TUNER OUT
9 GND
10 VIDEO IN
11 AGC CTL
0 5 VIDEO UNIT
0 3 MAIN
(VIDEO. AUDIO. SERVO. SYSCON. REG. TUNER)
CN603
1 JSA
2 JSB
3 GND
4 SHUTTLE(L)
JOG/ SHUTTLE
CN602
R.PAUSE
GND
BACK UP5V
CN202
FRONT V IN
GND
CN802
AL5V
SCLK
STB
SDATA
GND
RC.IN
DC(-)
DC(+)
-28V
CN103
R.PAUSE
GND
BACK UP5V
CN101
FRONT V IN
GND
CN102
FRONT INPUT(L)
FRONT INPUT(R)
GND
3 6 SW/JACK
CN3
CN2
1 OPERATE
2 OPE LED(A)
3 KEY1
4 KEY2
5 KEY3
6 KEY4
7 SEG3
8 SEG4
9 FRONT CTL
CN1
AL5V
SCLK
STB
SDATA
GND
RC.IN
DC(-)
DC(+)
-28V
2 8 DISPLAY/SW

NO	NAME
5 8	DRUM MOTOR
5 7	CAP MDA
5 5	LOADING MDA
5 1	DECK TERMINAL
4 3	PRE/REC
4 1	U. DRUM
3 6	SW/JACK
2 8	DISPLAY/SW
1 4	DEMOD
1 2	A/C HEAD
0 9	AUDIO UNIT
0 6	TERMINAL
0 5	VIDEO UNIT
0 3	MAIN
0 1	SW REG

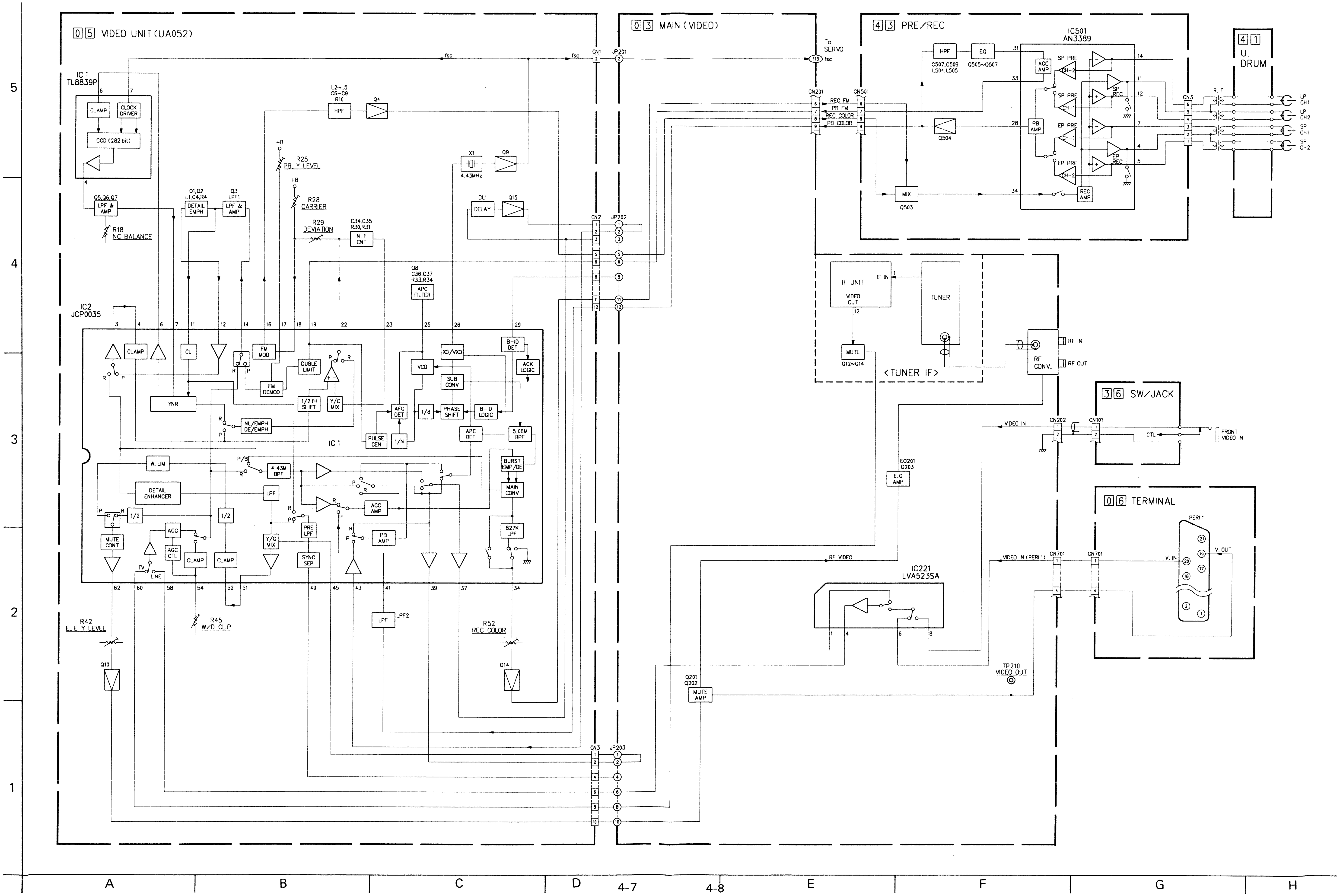
NOTES:1. < > WR☐ indications on Board Interconnections are as shown below.
< > :Printed board block number in the parts list.
WR☐ :Reference number of special wire in the parts list.

4.2 SYSCON/SERVO BLOCK DIAGRAM



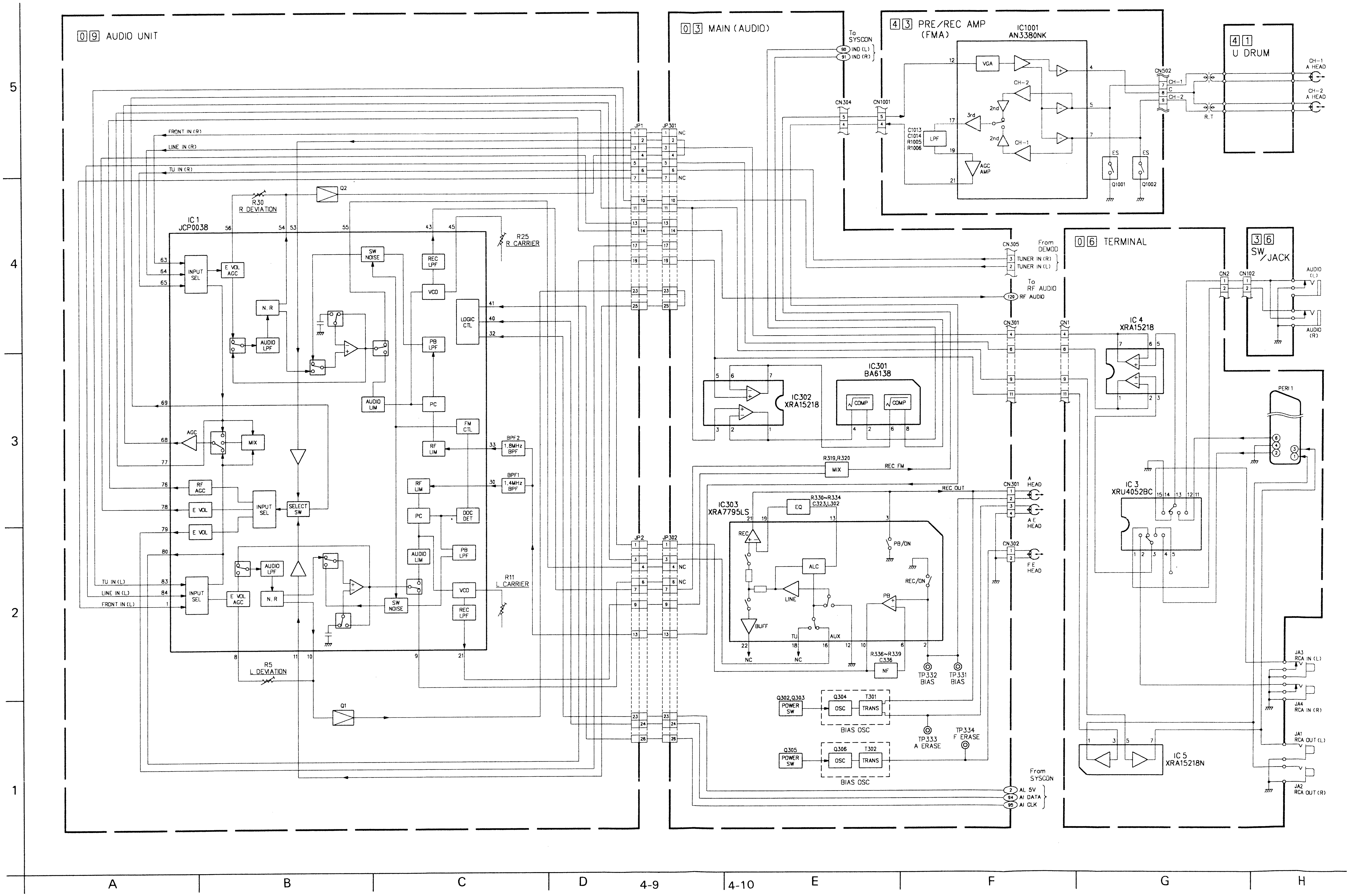
0 3 MAIN (SYSCON/SERVO)
1 2 A/C HEAD
CTL HEAD
CN1
CN401
CAP FG
Fsc
AVG FM
C SYNC
To VIDEO
YNR CTL
REAR (L)
PB SPE (L)
From REG
SW 5V
IC474 MC14161BF
COUNT DOWN
IC473 BU4011BF
LOGIC
IC604 M50255P
EXP DATA
EXP CLK
YNR
FRONT
PB SPE
EXPANDER
TP401 CTL P
R402~R405 C402~C404
N.F
DUTY CTL VISS DET
Fsc
SERIAL DECORDER
C/D
CTL DELAY
DRUM REF
SYNC SEP
CAP F/V
CAP P/D
DRUM P/D
DRUM F/V
FF VP GEN
MODE B
N.F FILTER
R410~R417 C413,C414
CAPSTAN FILTER
R418,R419 C415,C416
IC401 HD49780NT (SERVO PROCESS CPU)
DRUM FILTER
R423,R424 C417,C418
N.F FILTER
R429~R432 C410,C411
IC472 XRA10358F
ES
Q472
5 8 DRUM MOTOR
CN402
JA1 PDC/VPT I/O
IC601 HD6433927A36F (SYSCON CPU)
SERVO-CLK
M-DATA
SERVO DATA
LCM 2
LCM 1
I2C DATA
CTL P
I2C CLK
RC IN
EXP DATA
CAP REN
VP CTL
C PLS
JSB
JSA
CAP FG
DUTY I/O
D FF
SPEED CTL
DRUM V CTL
CAP V
THERM
CLK
DATA
S-CLK
POWER DOWN
AVG FM
X2
X1
OSC 1
OSC 2
RESET
MCE
TU FG
SP FG
POWER DOWN
Q604
X601
CF601
C619
TIMER CLOCK
IC603 S-80728
RESET
IC602 CAT35C104P-042
DATA 2
DATA 1
CLK
CE
MEMORY
5 7 CAPSTAN MDA
CAP FG
CAP CTL
CAP R
5 1 DECK TERMINAL
IC1 M66007P
ENCORDER
ROTARY ENCORDER
END SENS
Q2
CASS LOAD END
REC SAFF
START SENS
Q1
CN601
SUP REEL SENS
PS2
TU REEL SENS
PS1
TH1 THERMISTOR
CN6
CN603
JOG/SHUTTLE
CN1
5 5 LOADING MDA
IC1
MOTOR CTL LOGIC
BA6418N
M
5
4
3
2
1
A
B
C
D
E
F
G
H

4.3 VIDEO BLOCK DIAGRAM



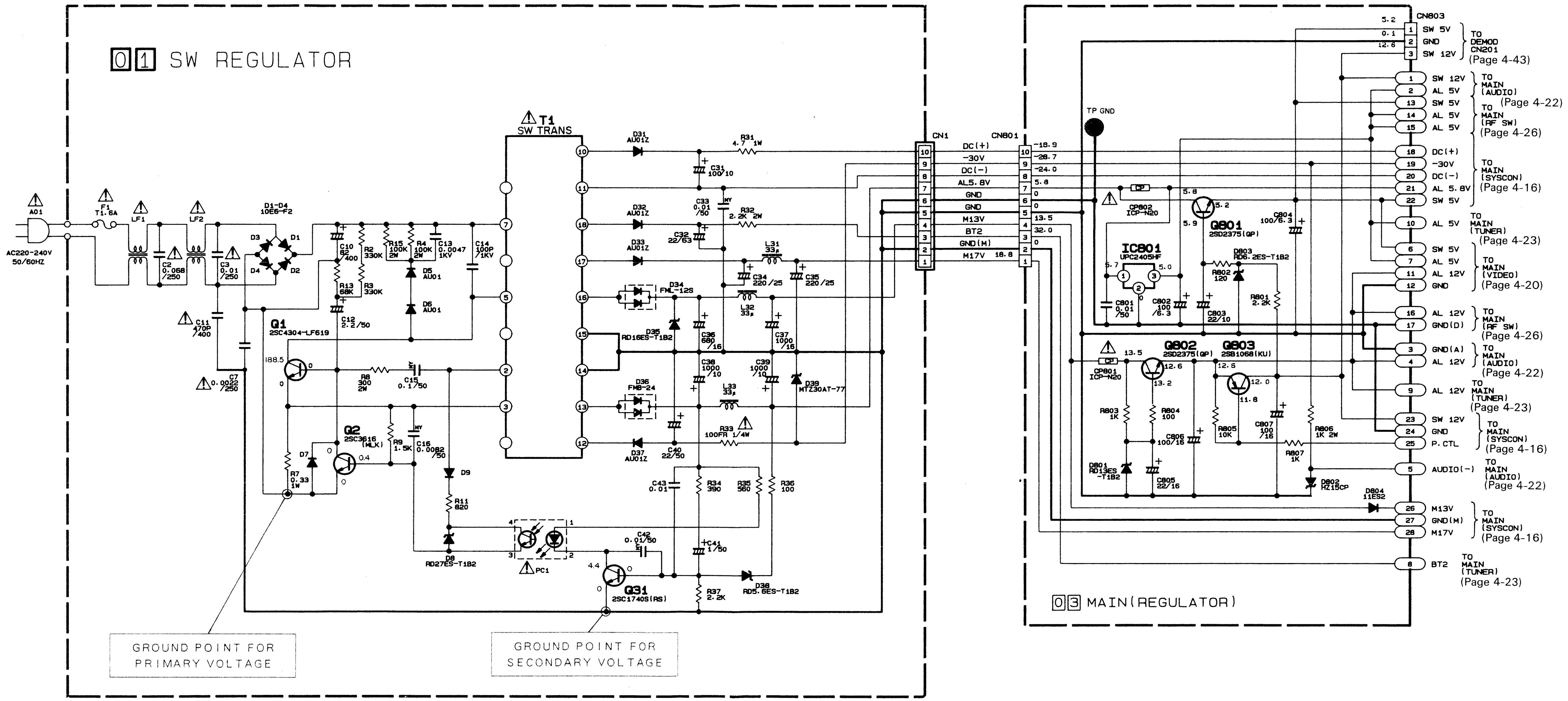
05 VIDEO UNIT (UA052)
IC1 TL8839P
CLAMP
CLOCK DRIVER
CCD (282 bit)
Q5,Q6,Q7 LPF & AMP
R18 NC BALANCE
Q1,Q2 L1,C4,R4 DETAIL EMPH
Q3 LPF1 LPF & AMP
L2~L5 C5~C9 R10 HPF
Q4
R25 PB. Y LEVEL
R28 CARRIER
R29 DEVIATION
C34,C35 R30,R31 N. F CNT
X1 4.43MHz
Q9
DL1 DELAY
Q15
Q8 C36,C37 R33,R34 APC FILTER
fsc
IC2 JCP0035
CLAMP
CL
FM MOD
FM DEMOD
DUBLE LIMIT
1/2 fH SHIFT
Y/C MIX
YNR
NL/EMPH DE/EMPH
IC1
PULSE GEN
1/N
AFC DET
VCO
XO/VXO
SUB CONV
1/8
PHASE SHIFT
B-ID LOGIC
B-ID DET
ACK LOGIC
APC DET
5.06M BPF
BURST EMP/DE
MAIN CONV
627K LPF
W. LIM
4.43M BPF
DETAIL ENHANCER
LPF
1/2
MUTE CONT
AGC
AGC CTL
CLAMP
ACC AMP
PB AMP
PRE LPF
SYNC SEP
Y/C MIX
TV
LINE
P/B
R
P
R42 E. E Y LEVEL
Q10
R45 W/D CLIP
LPF LPF2
R52 REC COLOR
Q14
CN1
JP201
CN2
JP202
CN3
JP203
03 MAIN (VIDEO)
To SERVO
113 fsc
CN201
CN501
REC FM
PB FM
REC COLOR
PB COLOR
43 PRE/REC
HPF
EQ
C507,C509 L504,L505
Q505~Q507
Q504
MIX
Q503
IC501 AN3389
AGC AMP
PB AMP
REC AMP
SP PRE
CH-2
CH-1
EP PRE
SP REC
EP REC
CN3
R. T
41 U. DRUM
LP CH1
LP CH2
SP CH1
SP CH2
IF UNIT
IF IN
VIDEO OUT
TUNER
MUTE
Q12~Q14
<TUNER IF>
RF CONV.
RF IN
RF OUT
36 SW/JACK
VIDEO IN
CN202
CN101
CTL
FRONT VIDEO IN
EQ201 Q203 E.Q AMP
06 TERMINAL
PERI 1
VIDEO IN (PERI 1)
CN701
V. IN
V. OUT
RF VIDEO
IC221 LVA523SA
Q201 Q202 MUTE AMP
TP210 VIDEO OUT
A
B
C
D
E
F
G
H
1
2
3
4
5

4.4 AUDIO BLOCK DIAGRAM


09 AUDIO UNIT
IC 1 JCP0038
INPUT SEL
E VOL AGC
N.R
AUDIO LPF
SW NOISE
REC LPF
VCO
PB LPF
LOGIC CTL
AUDIO LIM
PC
FM CTL
RF LIM
AGC
MIX
RF AGC
E VOL
INPUT SEL
SELECT SW
DOC DET
R30 R DEVIATION
R25 R CARRIER
R11 L CARRIER
R5 L DEVIATION
Q1
Q2
BPF2 1.8MHz BPF
BPF1 1.4MHz BPF
FRONT IN (R)
LINE IN (R)
TU IN (R)
TU IN (L)
LINE IN (L)
FRONT IN (L)
JP1
JP301
JP2
JP302
NC
03 MAIN (AUDIO)
To SYSCON
90 IND (L)
91 IND (R)
CN304
CN1001
43 PRE/REC AMP (FMA)
IC1001 AN3380NK
VGA
CH-2
CH-1
3rd
2nd
LPF
AGC AMP
C1013 C1014 R1005 R1006
ES
Q1001
Q1002
CN502
CH-1
C
CH-2
R.T
41 U DRUM
CH-1 A HEAD
CH-2 A HEAD
CN305
From DEMOD
TUNER IN (R)
TUNER IN (L)
To RF AUDIO
120 RF AUDIO
CN301
IC302 XRA15218
IC301 BA6138
√ COMP
R319,R320
MIX
REC FM
REC OUT
IC303 XRA7795LS
EQ
R330~R334 C323,L302
REC
PB/ON
ALC
REC/ON
LINE
BUFF
TU
AUX
PB
R336~R339 C336
NF
TP332 BIAS
TP331 BIAS
Q302,Q303 POWER SW
Q304 OSC
T301 TRANS
BIAS OSC
TP333 A ERASE
TP334 F ERASE
Q305 POWER SW
Q306 OSC
T302 TRANS
A HEAD
A.E HEAD
CN302
F.E HEAD
From SYSCON
2 AL 5V
94 AI DATA
95 AI CLK
06 TERMINAL
CN1
IC 4 XRA15218
IC 3 XRU4052BC
IC 5 XRA15218N
PERI 1
JA3 RCA IN (L)
JA4 RCA IN (R)
JA1 RCA OUT (L)
JA2 RCA OUT (R)
36 SW/JACK
CN2
CN102
AUDIO (L)
AUDIO (R)
A
B
C
D
E
F
G
H
1
2
3
4
5

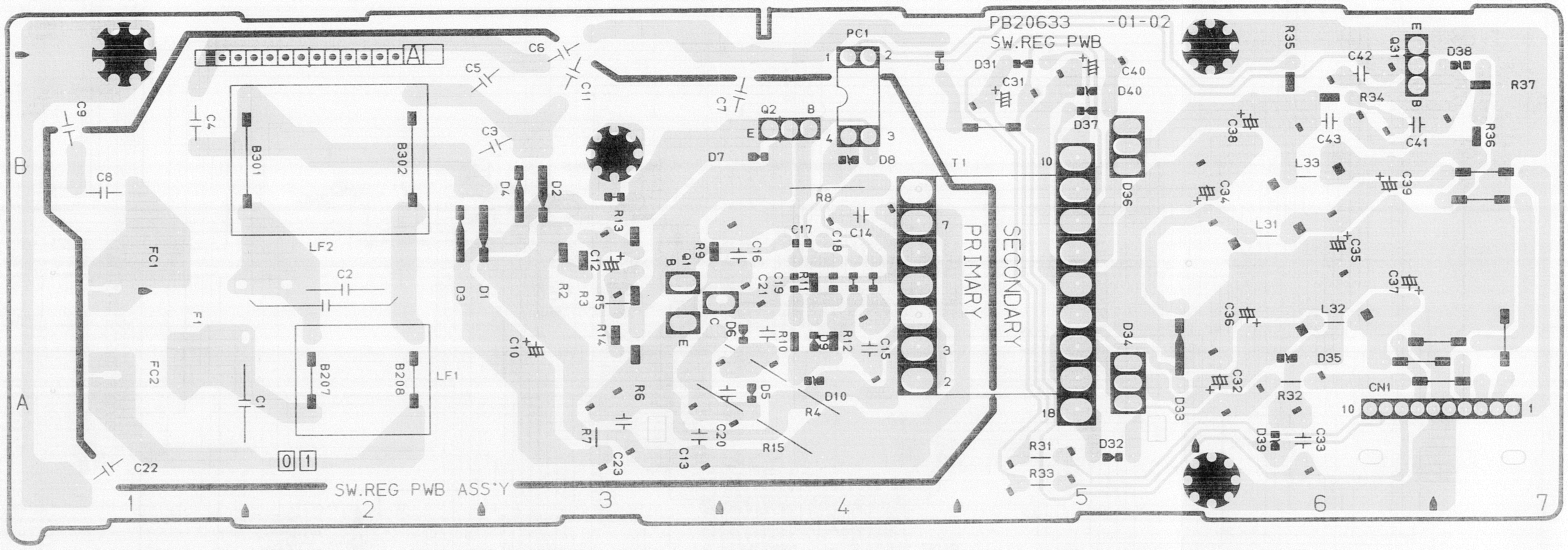
4.5 SWITCHING REGULATOR & MAIN (REGULATOR) SCHEMATIC DIAGRAMS

NOTE: For measurement of RED shaded portions, mechanism assembly with MAIN board assembly should be removed from the bottom chassis.



01 SW REGULATOR
AC220-240V 50/60HZ
A01
F1 T1.6A
LF1
LF2
C2 0.068 /250
C3 0.01 /250
D1-D4 10E6-F2
D1
D2
D3
D4
C11 470P /400
C7 0.0022 /250
C10 82 /400
R13 68K
R3 330K
R2 330K
R15 100K 2W
R4 100K 2W
C13 0.0047 1KV
C14 100P /1KV
D5 AU01
D6 AU01
C12 2.2/50
Q1 2SC4304-LF619
188.5
R8 300 2W
C15 0.1/50
Q2 2SC3616 (MLK)
R9 1.5K
C16 0.0082 /50
D7
R7 0.33 1W
D9
R11 820
D8 RD27ES-T1B2
PC1
T1 SW TRANS
D31 AU01Z
R31 4.7 1W
C31 100/10
D32 AU01Z
C33 0.01 /50
R32 2.2K 2W
C32 22/63
D33 AU01Z
L31 33μ
C34 220/25
C35 220/25
D34 FML-12S
L32 33μ
D35 RD16ES-T1B2
C36 680 /16
C37 1000 /16
C38 1000 /10
C39 1000 /10
L33 33μ
D39 MTZ30AT-77
D36 FMB-24
R33 100FR 1/4W
D37 AU01Z
C40 22/50
C43 0.01
R34 390
R35 560
R36 100
C42 0.01/50
C41 1/50
Q31 2SC1740S(RS)
D38 RD5.6ES-T1B2
R37 2.2K
GROUND POINT FOR PRIMARY VOLTAGE
GROUND POINT FOR SECONDARY VOLTAGE
CN1
CN801
DC(+)
-30V
DC(-)
AL5.8V
GND
GND
M13V
BT2
GND(M)
M17V
18.8
-18.9
-28.7
-24.0
5.8
0
0
13.5
32.0
0
TP GND
CP802 ICP-N20
IC801 UPC2405HF
C801 0.01 /50
C802 100 /6.3
C803 22/10
Q801 2SD2375(QP)
C804 100/6.3
D803 RD6.2ES-T1B2
R802 120
R801 2.2K
Q802 2SD2375(QP)
Q803 2SB1068(KU)
CP801 ICP-N20
R803 1K
R804 100
C806 100/16
R805 10K
C807 100 /16
R806 1K 2W
R807 1K
D801 RD13ES -T1B2
C805 22/16
D802 HZ15CP
D804 11ES2
03 MAIN(REGULATOR)
CN803
5.2
0.1
12.6
SW 5V
GND
SW 12V
TO DEMOD CN201 (Page 4-43)
SW 12V
AL 5V
TO MAIN (AUDIO) (Page 4-22)
SW 5V
AL 5V
AL 5V
TO MAIN (RF SW) (Page 4-26)
DC(+)
-30V
DC(-)
AL 5.8V
SW 5V
TO MAIN (SYSCON) (Page 4-16)
AL 5V
TO MAIN (TUNER) (Page 4-23)
SW 5V
AL 5V
AL 12V
GND
TO MAIN (VIDEO) (Page 4-20)
AL 12V
GND(D)
TO MAIN (RF SW) (Page 4-26)
GND(A)
AL 12V
TO MAIN (AUDIO) (Page 4-22)
AL 12V
TO MAIN (TUNER) (Page 4-23)
SW 12V
GND
P.CTL
TO MAIN (SYSCON) (Page 4-16)
AUDIO(-)
TO MAIN (AUDIO) (Page 4-22)
M13V
GND(M)
M17V
TO MAIN (SYSCON) (Page 4-16)
BT2
TO MAIN (TUNER) (Page 4-23)

S25353


PB20633 -01-02
SW.REG PWB
SW.REG PWB ASS'Y
PRIMARY
SECONDARY
PC1
T1
CN1
Q1
Q2
Q31
LF1
LF2
FC1
FC2
F1
B301
B302
B207
B208
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15
C16
C17
C18
C19
C20
C21
C22
C23
C31
C32
C33
C34
C35
C36
C37
C38
C39
C40
C41
C42
C43
D1
D2
D3
D4
D5
D6
D7
D8
D9
D10
D31
D32
D33
D34
D35
D36
D37
D38
D39
D40
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
R15
R31
R32
R33
R34
R35
R36
R37
L31
L32
L33
A
B
1
2
3
4
5
6
7

MAIN COMPONENT PARTS
LOCATION GUIDE<SW REG PWB>

REF. No.	LOCATION
TRANSISTOR	
Q1	3A
Q2	4B
Q31	6B

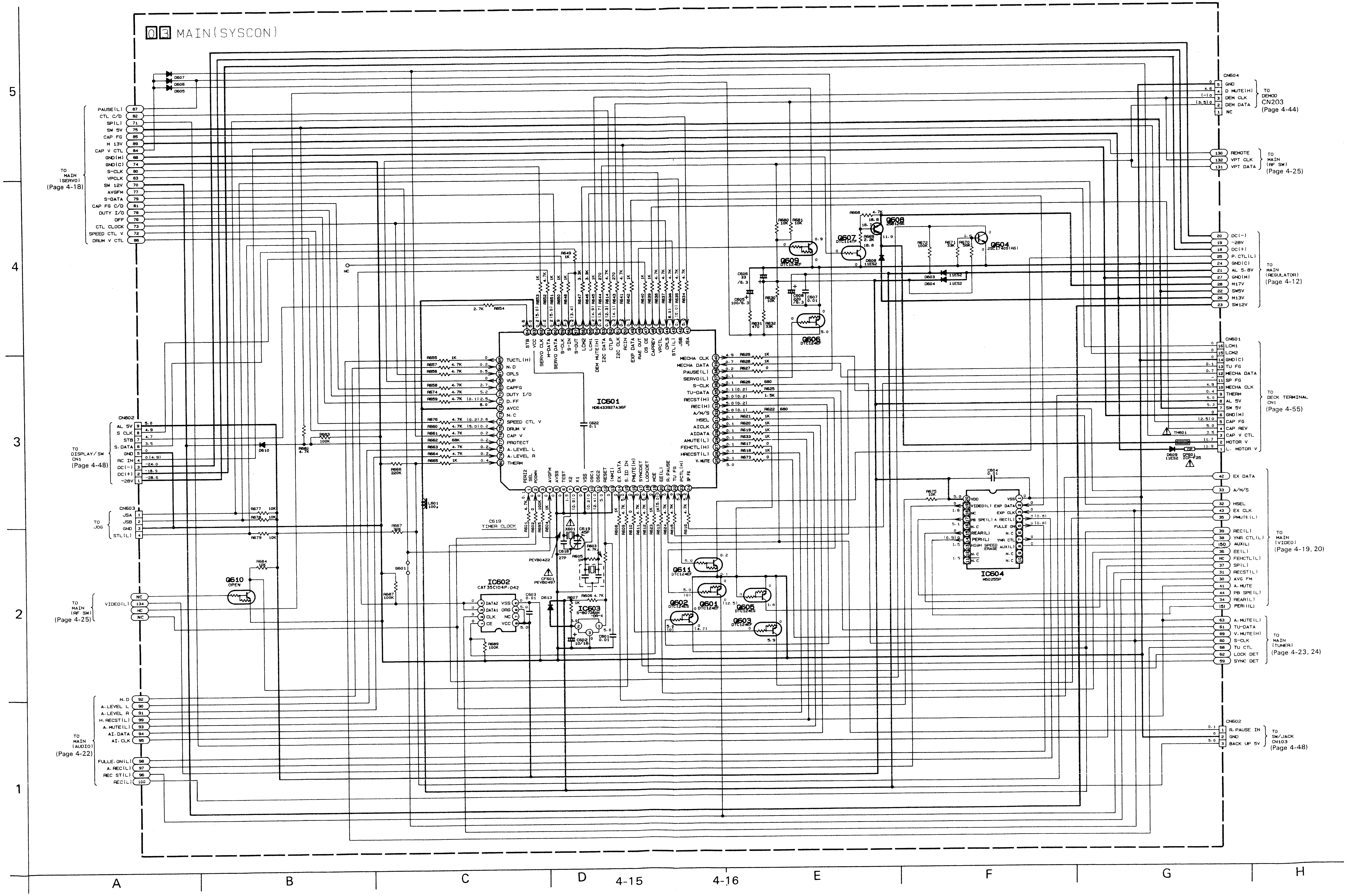
REF. No.	LOCATION
DIODE	
D1	3B
D2	3B
D3	2B
D4	3B
D5	4A
D6	4A
D7	4B
D8	4B
D9	4A

REF. No.	LOCATION
DIODE	
D31	5B
D32	5A
D33	5A
D34	5A
D35	6A
D36	5B
D37	5B
D38	7B
D39	6A

REF. No.	LOCATION
CONNECTOR	
CN1	6A

4.7 SYSTEM CONTROL SCHEMATIC DIAGRAM

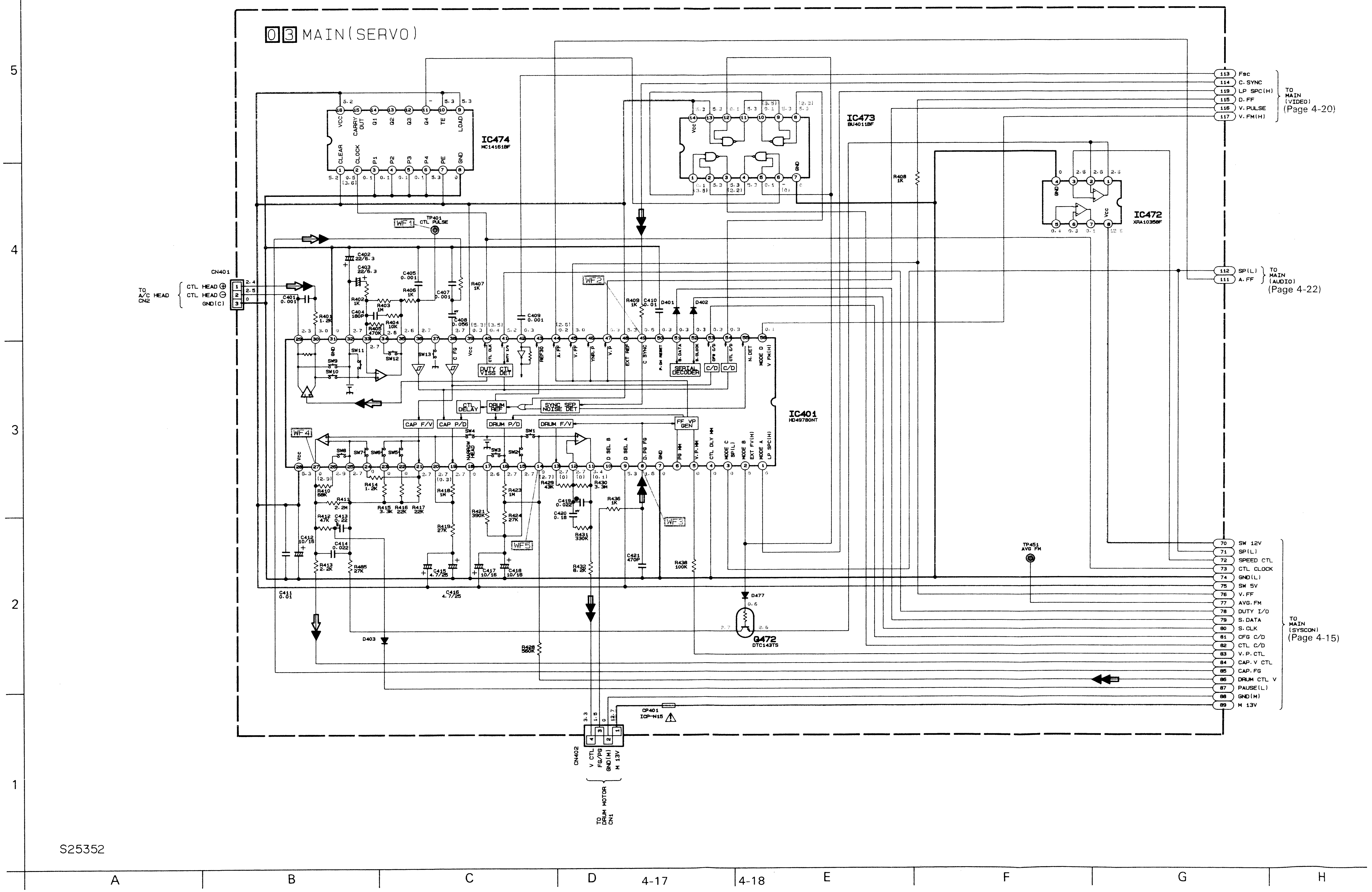
NOTE: For measurement of RED shaded portions, mechanism assembly with MAIN board assembly should be removed from the bottom chassis.



03 MAIN(SYSCON)
IC601
HD6433927A36F
IC602
CAT35C104P-042
IC603
IC604
M50255P
Q601
Q602
Q603
Q604
Q605
Q606
Q607
Q608
Q609
Q610
Q611
CN601
CN602
CN603
CN604
CN802
TO MAIN (SERVO) (Page 4-18)
TO DISPLAY/SW CN1 (Page 4-48)
TO JOG
TO MAIN (RF SW) (Page 4-25)
TO MAIN (AUDIO) (Page 4-22)
TO DEMOD CN203 (Page 4-44)
TO MAIN (REGULATOR) (Page 4-12)
TO DECK TERMINAL CN1 (Page 4-55)
TO MAIN (VIDEO) (Page 4-19, 20)
TO MAIN (TUNER) (Page 4-23, 24)
TO SW/JACK CN103 (Page 4-48)
C619 TIMER CLOCK
1
2
3
4
5
A
B
C
D
E
F
G
H

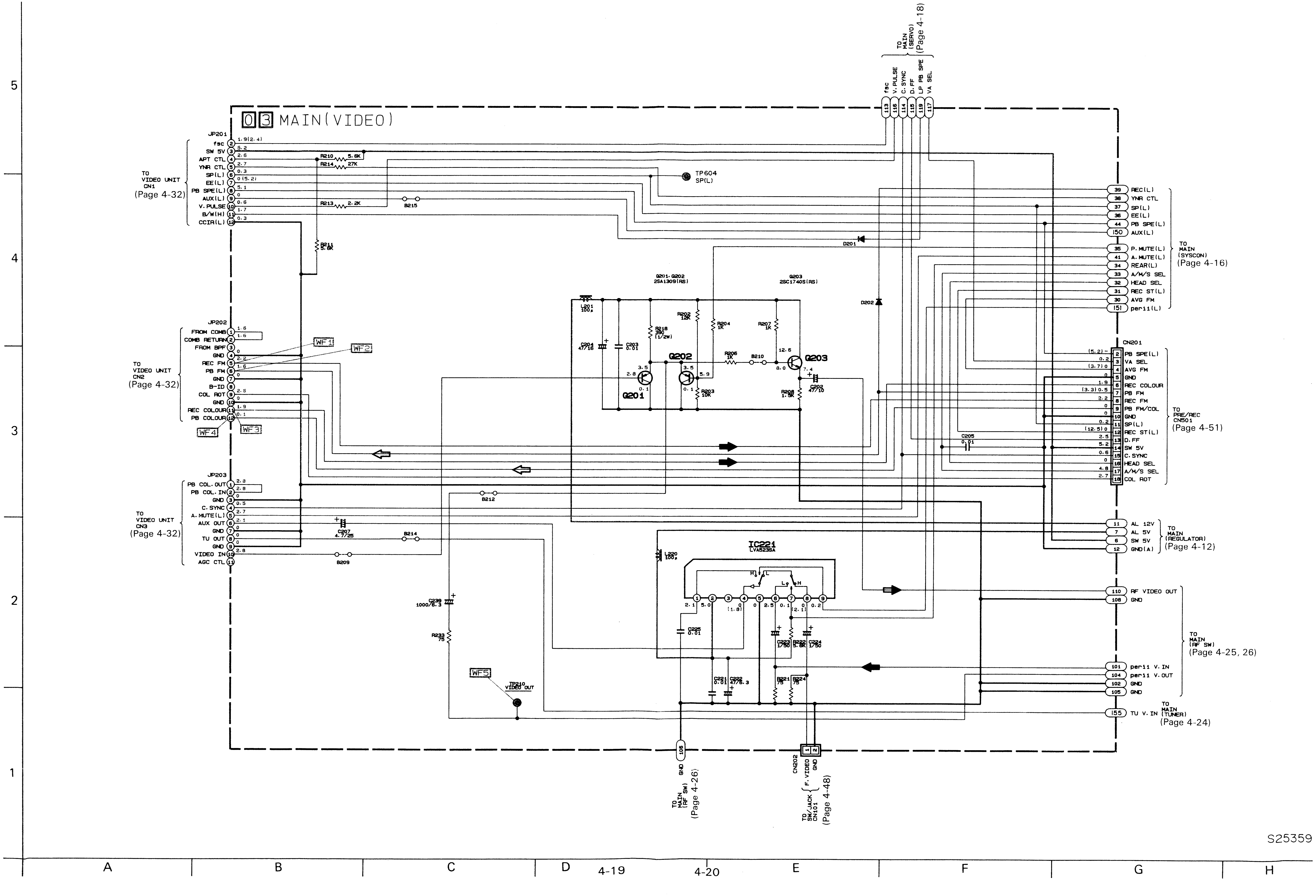
4.8 SERVO SCHEMATIC DIAGRAM

NOTE: For measurement of RED shaded portions, mechanism assembly with MAIN board assembly should be removed from the bottom chassis.


03 MAIN(SERVO)
IC474 MC14161BF
IC473 BU4011BF
IC472 XRA10358F
IC401 HD49780NT
Q472 DTC143TS
CN401
TO A/C HEAD CN2
CTL HEAD ⊕
CTL HEAD ⊖
GND(C)
WF1 TP401 CTL PULSE
WF2
WF3
WF4
WF5
TP451 AVG FM
CAP F/V
CAP P/D
CTL DELAY
DRUM REF
SYNC SEP NOISE DET
DRUM P/D
DRUM F/V
FF VP GEN
DUTY CTL VISS DET
SERIAL DECODER
C/D
113 Fsc
114 C. SYNC
119 LP SPC(H)
115 D. FF
116 V. PULSE
117 V. FM(H)
TO MAIN (VIDEO) (Page 4-20)
112 SP(L)
111 A. FF
TO MAIN (AUDIO) (Page 4-22)
70 SW 12V
71 SP(L)
72 SPEED CTL
73 CTL CLOCK
74 GND(L)
75 SW 5V
76 V. FF
77 AVG. FM
78 DUTY I/O
79 S. DATA
80 S. CLK
81 CFG C/D
82 CTL C/D
83 V. P. CTL
84 CAP. V CTL
85 CAP. FG
86 DRUM CTL V
87 PAUSE(L)
88 GND(M)
89 M 13V
TO MAIN (SYSCON) (Page 4-15)
CP401 ICP-N15
CN402
V CTL
FG/PG
GND(M)
M 13V
TO DRUM MOTOR CN1
S25352
A
B
C
D
E
F
G
H
1
2
3
4
5

4.9 VIDEO SCHEMATIC DIAGRAM

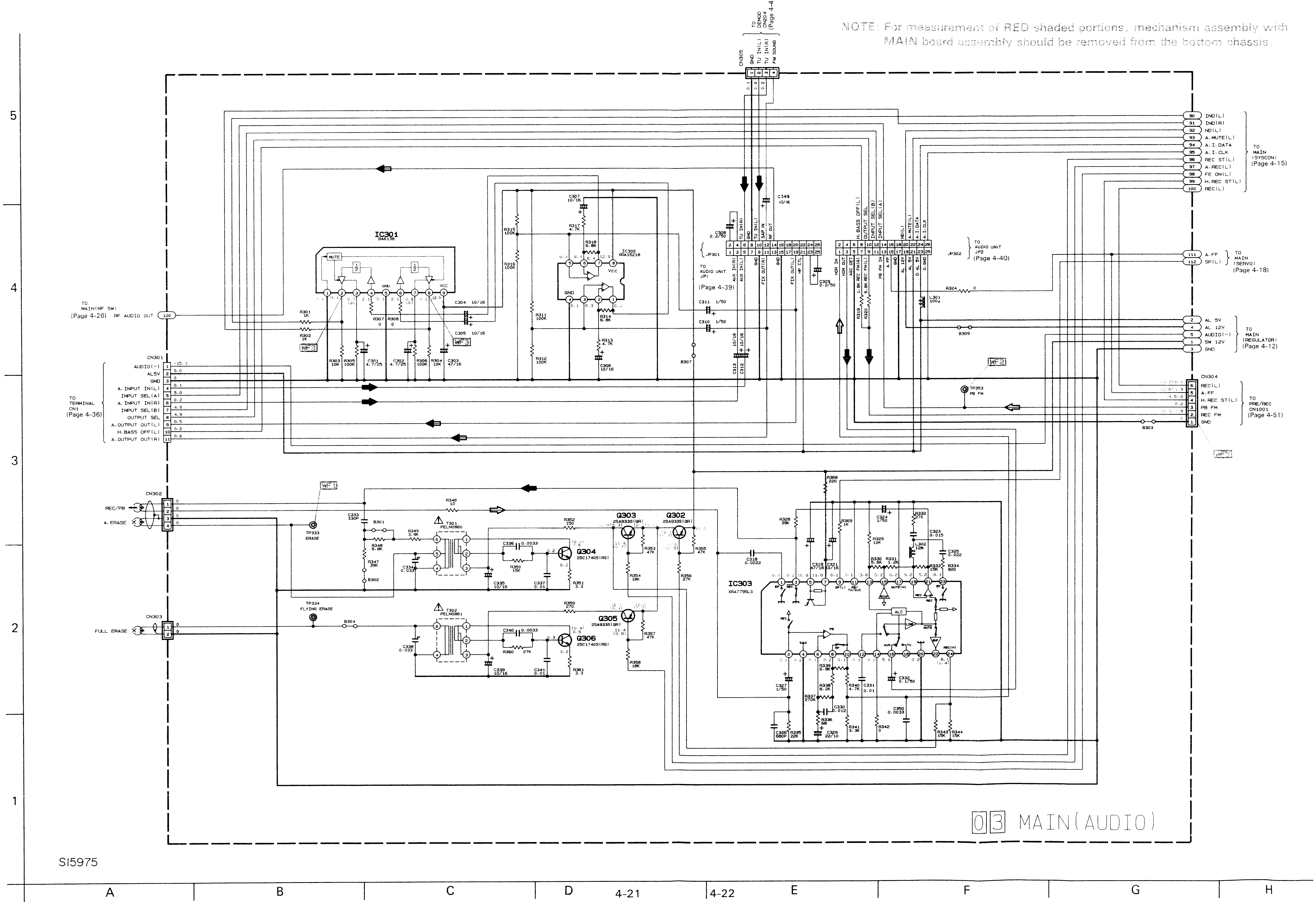
NOTE: For measurement of RED shaded portions, mechanism assembly with MAIN board assembly should be removed from the bottom chassis.



03 MAIN(VIDEO)
TO MAIN (SERVO) (Page 4-18)
113 fsc
116 V.PULSE
114 C.SYNC
115 D.FF
119 LP PB SPE
117 VA SEL
JP201
TO VIDEO UNIT CN1 (Page 4-32)
2 fsc 1.9(2.4)
3 SW 5V 5.2
4 APT CTL 2.6
5 YNR CTL 2.7
6 SP(L) 0.3
7 EE(L) 0(5.2)
8 PB SPE(L) 5.1
9 AUX(L) 0
10 V.PULSE 0.6
11 B/W(H) 1.7
12 CCIR(L) 0.3
R210 5.6K
R214 27K
R213 2.2K
R211 5.6K
B215
TP604 SP(L)
JP202
TO VIDEO UNIT CN2 (Page 4-32)
1 FROM COMB 1.6
2 COMB RETURN 1.6
3 FROM BPF
4 GND 0
5 REC FM 2.2
6 PB FM 1.6
7 GND 0
8 B-ID
9 COL ROT 2.5
10 GND 0
11 REC COLOUR 1.9
12 PB COLOUR 0.1
WF1
WF2
WF3
WF4
JP203
TO VIDEO UNIT CN3 (Page 4-32)
1 PB COL. OUT 2.8
2 PB COL. IN 2.8
3 GND 0
4 C. SYNC 0.5
5 A. MUTE(L) 2.7
6 AUX OUT 2.1
7 GND 0
8 TU OUT 0
9 GND 0
10 VIDEO IN 2.8
11 AGC CTL
C207 4.7/25
B214
B209
B212
Q201·Q202 2SA1309(RS)
Q203 2SC1740S(RS)
L201 100μ
C204 47/16
C203 0.01
R218 390 (1/2W)
R202 12K
R204 1K
R207 1K
R206 1K
B210
R203 10K
R208 1.5K
C202 47/10
Q201
Q202
Q203
3.5
2.8
0.1
3.5
5.9
0.1
12.6
8.0
7.4
D201
D202
C205 0.01
IC221 LVA523SA
L220 100μ
H L
L H
1 2.1
2 5.0
3
4 0 (1.8)
5 0
6 2.5
7 0.1
8 0 (2.1)
9 0.2
C225 0.01
C221 0.01
C222 47/6.3
C223 1/50
R222 5.6K
C224 1/50
R221 75
R224 75
C239 1000/6.3
R233 75
WF5
TP210 VIDEO OUT
TO MAIN (SYSCON) (Page 4-16)
39 REC(L)
38 YNR CTL
37 SP(L)
36 EE(L)
44 PB SPE(L)
150 AUX(L)
35 P.MUTE(L)
41 A.MUTE(L)
34 REAR(L)
33 A/M/S SEL
32 HEAD SEL
31 REC ST(L)
30 AVG FM
151 peri1(L)
CN201
TO PRE/REC CN501 (Page 4-51)
2 PB SPE(L) (5.2) -
3 VA SEL 0.2
4 AVG FM (3.7) 0
5 GND 0
6 REC COLOUR 1.9
7 PB FM (3.3) 0.5
8 REC FM 2.2
9 PB FM/COL 0
10 GND 0
11 SP(L) 0.2
12 REC ST(L) (12.5) 0
13 D.FF 2.5
14 SW 5V 5.2
15 C.SYNC 0.6
16 HEAD SEL 0
17 A/M/S SEL 4.8
18 COL ROT 2.7
TO MAIN (REGULATOR) (Page 4-12)
11 AL 12V
7 AL 5V
6 SW 5V
12 GND(A)
TO MAIN (RF SW) (Page 4-25, 26)
110 RF VIDEO OUT
108 GND
101 peri1 V. IN
104 peri1 V. OUT
102 GND
105 GND
TO MAIN (TUNER) (Page 4-24)
155 TU V. IN
106 GND
TO MAIN (RF SW) (Page 4-26)
CN202
1 F. VIDEO
2 GND
TO SW/JACK CN101 (Page 4-48)
5
4
3
2
1
A
B
C
D
E
F
G
H

S25359

4.10 AUDIO SCHEMATIC DIAGRAM

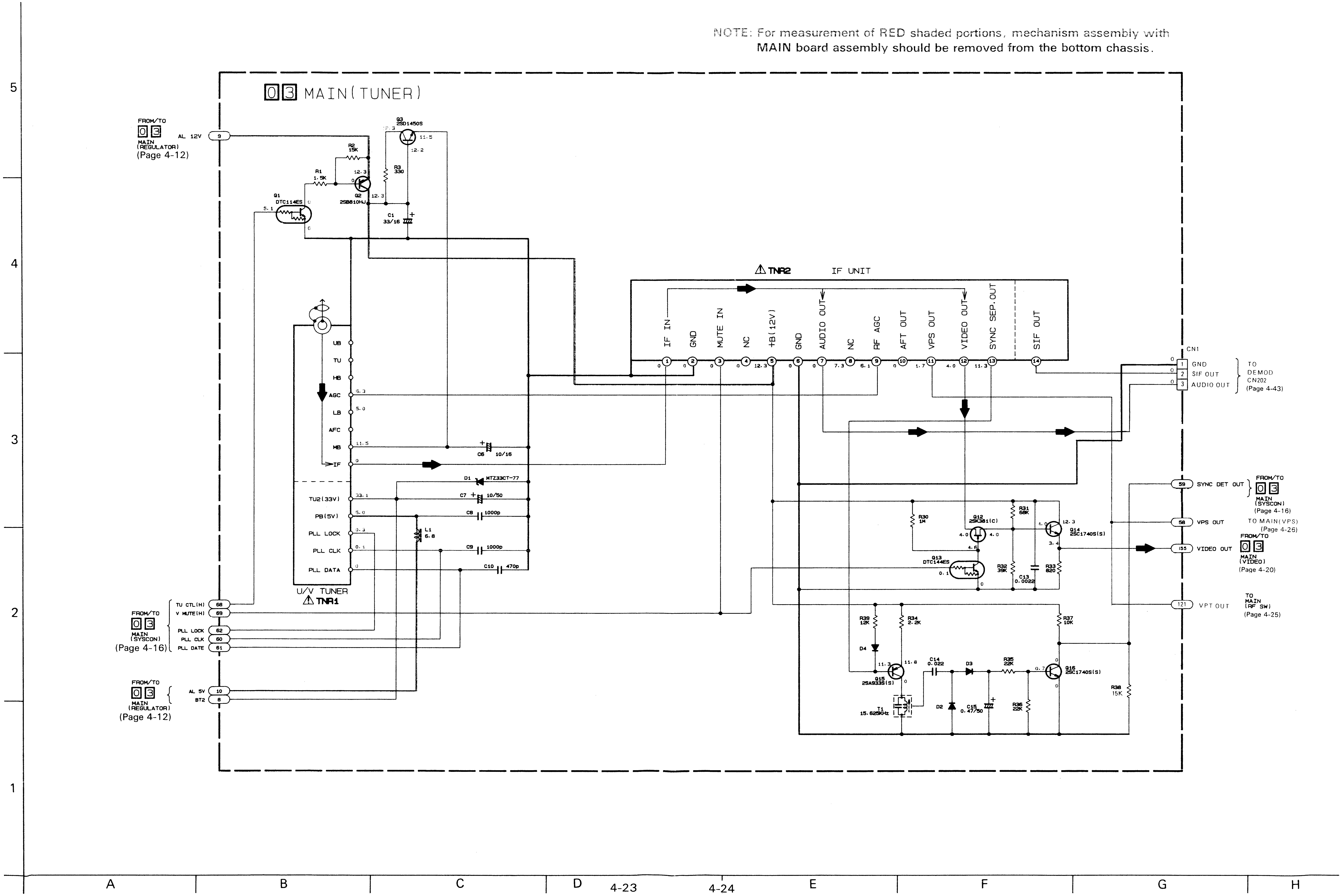

NOTE: For measurement of RED shaded portions, mechanism assembly with MAIN board assembly should be removed from the bottom chassis.

CN305
GND
TU IN(L)
TU IN(R)
FM SOUND
TO DEMOD CN204 (Page 4-44)
90 IND(L)
91 IND(R)
92 ND(L)
93 A. MUTE(L)
94 A. I. DATA
95 A. I. CLK
96 REC ST(L)
97 A. REC(L)
98 FE ON(L)
99 H. REC ST(L)
100 REC(L)
TO MAIN (SYSCON) (Page 4-15)
111 A. FF
112 SP(L)
TO MAIN (SERVO) (Page 4-18)
2 AL 5V
4 AL 12V
5 AUDIO(-)
1 SW 12V
3 GND
TO MAIN (REGULATOR) (Page 4-12)
CN304
6 REC(L)
5 A. FF
4 H. REC ST(L)
3 PB FM
2 REC FM
1 GND
TO PRE/REC CN1001 (Page 4-51)
TO MAIN(RF SW) (Page 4-26)
RF AUDIO OUT
120
CN301
AUDIO(-) 1
AL5V 2
GND 3
A. INPUT IN(L) 4
INPUT SEL(A) 5
A. INPUT IN(R) 6
INPUT SEL(B) 7
OUTPUT SEL 8
A. OUTPUT OUT(L) 9
H. BASS OFF(L) 10
A. OUTPUT OUT(R) 11
TO TERMINAL CN1 (Page 4-36)
IC301 BA6138
MUTE
IC302 XRA15218
IC303 XRA7795LS
JP301
TO AUDIO UNIT JP1 (Page 4-39)
JP302
TO AUDIO UNIT JP2 (Page 4-40)
AUX IN(R)
AUX IN(L)
TU IN(R)
TU IN(L)
GND
SAP IN
RF OUT
FIX OUT(R)
FIX OUT(L)
HP CTL
H. BASS OFF(L)
OUTPUT SEL
INPUT SEL(B)
INPUT SEL(A)
ND(L)
A. MUTE(L)
A. I. DATA
A. I. CLK
NOR IN
AUX OUT
ASC DET
1.8K REC FM(R)
6.8K REC FM(L)
PB FM IN
A. FF
AL 12V
AL 5V
D. GND
CN302
REC/PB
A. ERASE
TP333 ERASE
CN303
FULL ERASE
TP334 FLYING ERASE
T301 PELN0860
T302 PELN0861
Q303 2SA933S(QR)
Q302 2SA933S(QR)
Q304 2SC1740S(RS)
Q305 2SA933S(QR)
Q306 2SC1740S(RS)
TP353 PB FM
WF1
WF2
WF3
WF5
B301
B302
B303
B304
B307
B309
L301 100μ
L302 12m
ALC
03 MAIN(AUDIO)
5
4
3
2
1
A
B
C
D
E
F
G
H

SI5975

4.11 TUNER SCHEMATIC DIAGRAM

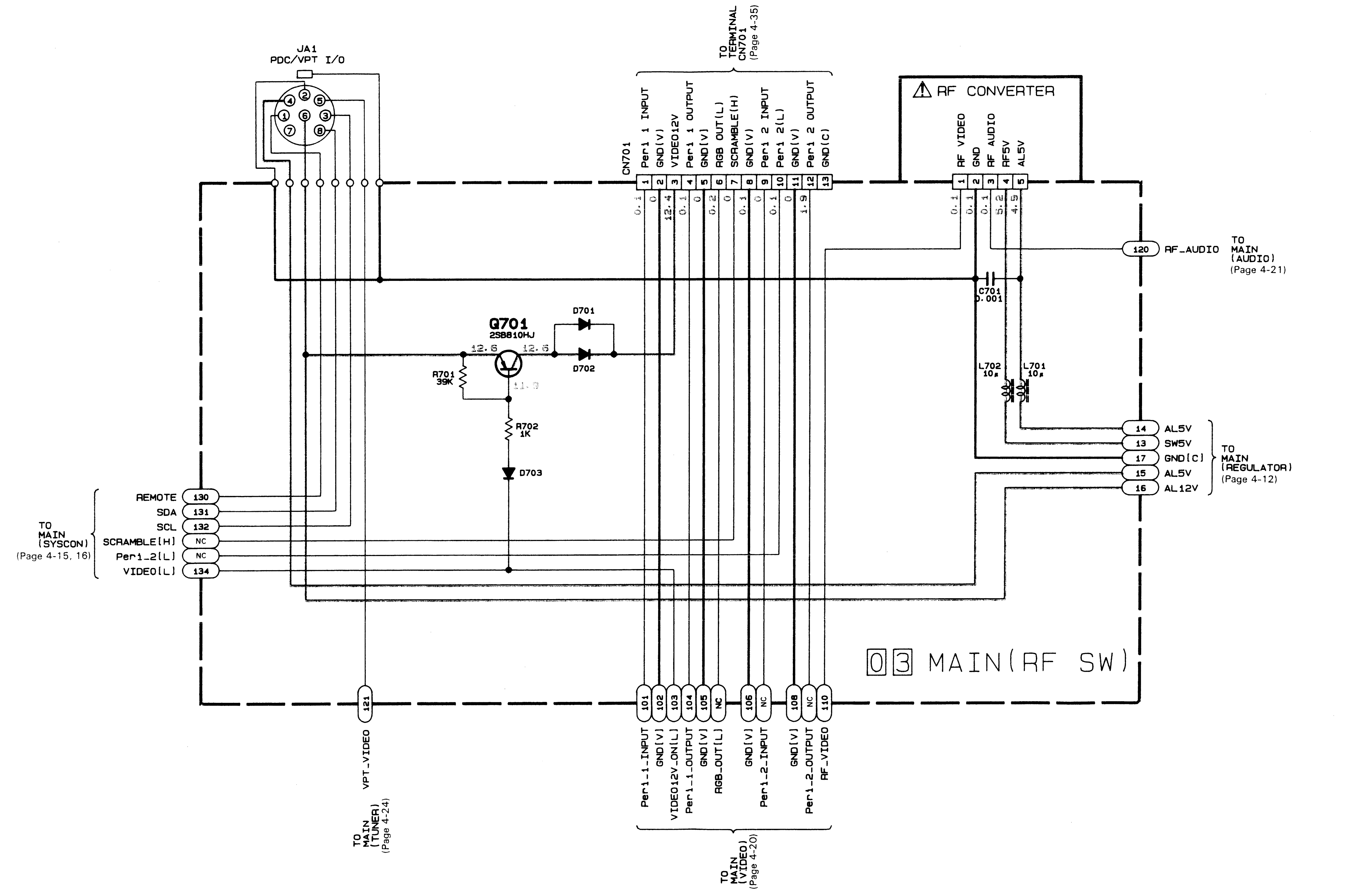
NOTE: For measurement of RED shaded portions, mechanism assembly with MAIN board assembly should be removed from the bottom chassis.



5
4
3
2
1
A
B
C
D
E
F
G
H
03 MAIN(TUNER)
FROM/TO
03
MAIN
(REGULATOR)
(Page 4-12)
AL 12V
9
Q3
2SD1450S
12.3
11.5
12.2
R2
15K
R1
1.5K
12.3
0
Q2
2SB810HJ
12.3
R3
330
C1
33/16
Q1
DTC114ES
5.1
0
0
UB
TU
HB
AGC
LB
AFC
MB
IF
6.3
5.0
11.5
0
TU2(33V)
PB(5V)
PLL LOCK
PLL CLK
PLL DATA
33.1
5.0
0.3
0.1
0
U/V TUNER
⚠ TNR1
C6 10/16
D1 MTZ33CT-77
C7 10/50
C8 1000p
L1
6.8
C9 1000p
C10 470p
FROM/TO
03
MAIN
(SYSCON)
(Page 4-16)
TU CTL(H) 68
V MUTE(H) 69
PLL LOCK 62
PLL CLK 60
PLL DATE 61
FROM/TO
03
MAIN
(REGULATOR)
(Page 4-12)
AL 5V 10
BT2 8
⚠ TNR2
IF UNIT
IF IN
GND
MUTE IN
NC
+B(12V)
GND
AUDIO OUT
NC
RF AGC
AFT OUT
VPS OUT
VIDEO OUT
SYNC SEP.OUT
SIF OUT
1
2
3
4
5
6
7
8
9
10
11
12
13
14
0
0
0
0
12.3
0
0
7.3
6.1
0
1.7
4.0
11.3
CN1
0
0
0
1 GND
2 SIF OUT
3 AUDIO OUT
TO
DEMOD
CN202
(Page 4-43)
R30
1M
Q12
2SK381(C)
4.0
4.0
4.6
R31
68K
Q14
2SC1740S(S)
4.0
12.3
3.4
Q13
DTC144ES
0.1
0
R32
39K
C13
0.0022
R33
820
R39
12K
R34
2.2K
R37
10K
D4
11.3
11.8
Q15
2SA933S(S)
0
C14
0.022
D3
R35
22K
0.7
Q16
2SC1740S(S)
0
0
T1
15.625KHz
D2
C15
0.47/50
R36
22K
R38
15K
59 SYNC DET OUT
FROM/TO
03
MAIN
(SYSCON)
(Page 4-16)
58 VPS OUT
TO MAIN(VPS)
(Page 4-26)
155 VIDEO OUT
FROM/TO
03
MAIN
(VIDEO)
(Page 4-20)
121 VPT OUT
TO
MAIN
(RF SW)
(Page 4-25)

4.12 RF SW SCHEMATIC DIAGRAM

NOTE: For measurement of RED shaded portions, mechanism assembly with MAIN board assembly should be removed from the bottom chassis.


JA1
PDC/VPT I/O
① ② ③ ④ ⑤ ⑥ ⑦ ⑧
TO
TERMINAL
CN701
(Page 4-35)
CN701
Per1 1 INPUT
GND(V)
VIDEO12V
Per1 1 OUTPUT
GND(V)
RGB OUT(L)
SCRAMBLE(H)
GND(V)
Per1 2 INPUT
Per1 2(L)
GND(V)
Per1 2 OUTPUT
GND(C)
1 2 3 4 5 6 7 8 9 10 11 12 13
0.1 0 12.4 0.1 0 0.2 0 0.1 0 0.1 0 1.9
RF CONVERTER
RF VIDEO
GND
RF AUDIO
RF5V
AL5V
1 2 3 4 5
0.1 0.1 0.1 5.2 4.9
120 RF_AUDIO
TO
MAIN
(AUDIO)
(Page 4-21)
C701
0.001
Q701
2SB810HJ
12.6
12.6
11.9
D701
D702
R701
39K
R702
1K
D703
L702
10μ
L701
10μ
14 AL5V
13 SW5V
17 GND(C)
15 AL5V
16 AL12V
TO
MAIN
(REGULATOR)
(Page 4-12)
REMOTE 130
SDA 131
SCL 132
SCRAMBLE(H) NC
Per1_2(L) NC
VIDEO(L) 134
TO
MAIN
(SYSCON)
(Page 4-15, 16)
03 MAIN(RF SW)
121
VPT_VIDEO
TO
MAIN
(TUNER)
(Page 4-24)
101 Per1_1_INPUT
102 GND(V)
103 VIDEO12V_ON(L)
104 Per1_1_OUTPUT
105 GND(V)
NC RGB_OUT(L)
106 GND(V)
NC Per1_2_INPUT
108 GND(V)
NC Per1_2_OUTPUT
110 RF_VIDEO
TO
MAIN
(VIDEO)
(Page 4-20)
5
4
3
2
1
A B C D E F G H

LEADLESS COMPONENT PARTS LOCATION GUIDE<MAIN PWB>

REF. No.	LOCATION
IC	
IC472	14D
IC473	14B
IC474	15B
IC601	7F
IC603	8D

REF. No.	LOCATION
RESISTOR	
R1	2M
R2	2M
R3	3N
R30	8N
R31	9N
R32	9N
R33	9N
R34	6N
R35	70
R36	70
R37	7N
R38	8N
R39	5N
R101	8J
R102	9J
R103	8K
R201	19F
R203	20G
R204	20G
R206	19G
R207	18G
R209	19F
R210	21C
R212	21D
R213	20B
R214	11H
R220	10N
R221	110
R222	10N
R223	120
R224	100
R230	11M
R233	120
R234	13M
R235	11M
R236	12M
R237	12M
R238	11M
R250	19D
R251	20D
R252	20D
R253	20D
R254	19D
R256	19C
R301	21P
R302	19P
R303	21P
R304	19P
R305	21P
R306	18P
R307	20P
R308	20P
R309	20P
R310	20P
R311	17P
R312	16P
R313	16P
R314	16P
R315	17P
R316	17P
R317	17P
R318	17P
R319	160
R320	160
R321	160
R322	150
R323	150
R324	14N
R325	22K
R326	22K
R328	21M
R329	20M
R330	20M
R331	20M
R332	19M
R333	21M
R334	20M
R335	21N
R336	21N
R337	21N
R338	21N
R339	21N
R340	21N
R341	20N
R342	20N
R343	20L
R344	200
R345	20L
R346	21M
R347	21L
R348	21L
R349	21L
R350	21K
R351	21K
R353	19K
R354	19K
R355	20K
R356	20K
R357	19K
R358	18K
R359	19K
R360	19K
R361	19J
R362	19K
R363	18K
R365	17K
R366	17K
R368	200
R369	19L
R401	17B
R402	17B
R403	17B
R404	16B
R405	17B
R406	16B
R407	16B
R408	13E
R409	19C
R410	17D
R411	17D
R412	17D
R413	14E
R414	17D
R415	17D
R416	16D
R417	16D
R418	16D
R419	16D
R420	16D
R421	16D
R422	10D
R423	16D
R424	16D
R425	15D
R426	16D
R427	16E
R429	15D
R430	15D
R431	15D
R434	15D
R435	15E
R438	14D
R440	17B
R449	14E
R451	17D
R453	16E
R455	16E
R456	18E
R485	16D
R601	7D
R602	7D
R603	8E
R604	7D
R605	8E
R608	9E
R609	9E
R610	9E
R611	9E
R612	9E
R622	9I
R628	7H
R929	7H
R630	3G
R631	10G
R632	10H
R639	6H
R648	6G
R658	6F
R661	6E
R662	6E
R663	6D
R664	6D
R666	6D
R667	6C
R668	4G
R669	5G
R670	7C
R671	8C
R672	7C
R675	7C
R677	6I
R678	7J
R679	7I
R680	8I
R681	7I
R684	9D
R688	10D
R689	10D
R690	11C
R701	90
R702	90
R703	9N
R801	2C

REF. No.	LOCATION
CAPACITOR	
C8	3M
C9	3M
C10	3M
C13	9N
C14	7N
C16	5N
C101	8J
C102	8J
C104	8K
C105	8K
C107	8K
C203	20G
C205	17M
C221	100
C225	120
C231	11M
C237	14L
C252	20D
C254	20D
C255	20D
C256	20D
C257	20D
C259	19C
C260	19C
C261	20C
C263	20C
C265	20C
C316	150
C318	21N
C322	20N
C326	21N
C328	21N
C330	21N
C333	21L
C336	21K
C337	20K
C340	19K
C341	19J
C344	17K
C345	18K
C347	16P
C348	17P
C350	210
C401	17B
C404	17B
C405	17A
C407	16B
C409	16C
C410	14C
C411	17C
C421	15D
C451	17D
C453	17E
C454	17E
C455	17E
C456	18E
C457	18D
C601	8F
C603	10D
C604	11J
C607	6E
C609	8I
C610	8I
C611	8I
C612	5G
C615	5G
C616	9E
C617	5G
C618	8E
C620	8I
C621	8J
C701	4P

MAIN COMPONENT PARTS LOCATION GUIDE<MAIN PWB>

REF. No.	LOCATION
IC	
IC221	11N
IC301	19P
IC302	17P
IC303	20N
IC401	16C
IC472	14D
IC473	14B
IC474	15B
IC601	7G
IC602	10D
IC603	8D
IC604	11I
IC801	3E

REF. No.	LOCATION
TRANSISTOR	
Q1	2M
Q2	2M
Q3	4N
Q12	8N
Q13	8N
Q14	9N
Q15	6N
Q16	7N
Q201	20H
Q202	20G
Q203	18G
Q302	20K
Q303	20K
Q304	21K
Q305	19K
Q306	19K
Q472	14D
Q601	11E
Q602	10F
Q603	10E
Q604	8C
Q605	8E
Q606	10G
Q607	4G
Q608	5G
Q609	8H
Q611	4C
Q701	90
Q801	3D
Q802	3C
Q803	2B

REF. No.	LOCATION
DIODE	
D1	3N
D2	7N
D3	7N
D4	6N
D201	21C
D202	16L
D401	8C
D402	8C
D403	14E
D477	14D
D603	5E
D604	5D
D605	14E
D606	14E
D607	13E
D608	4G
D609	3K
D610	6B
D613	8D
D701	90
D702	90
D703	90
D801	1B
D802	3C
D803	3C
D804	2B

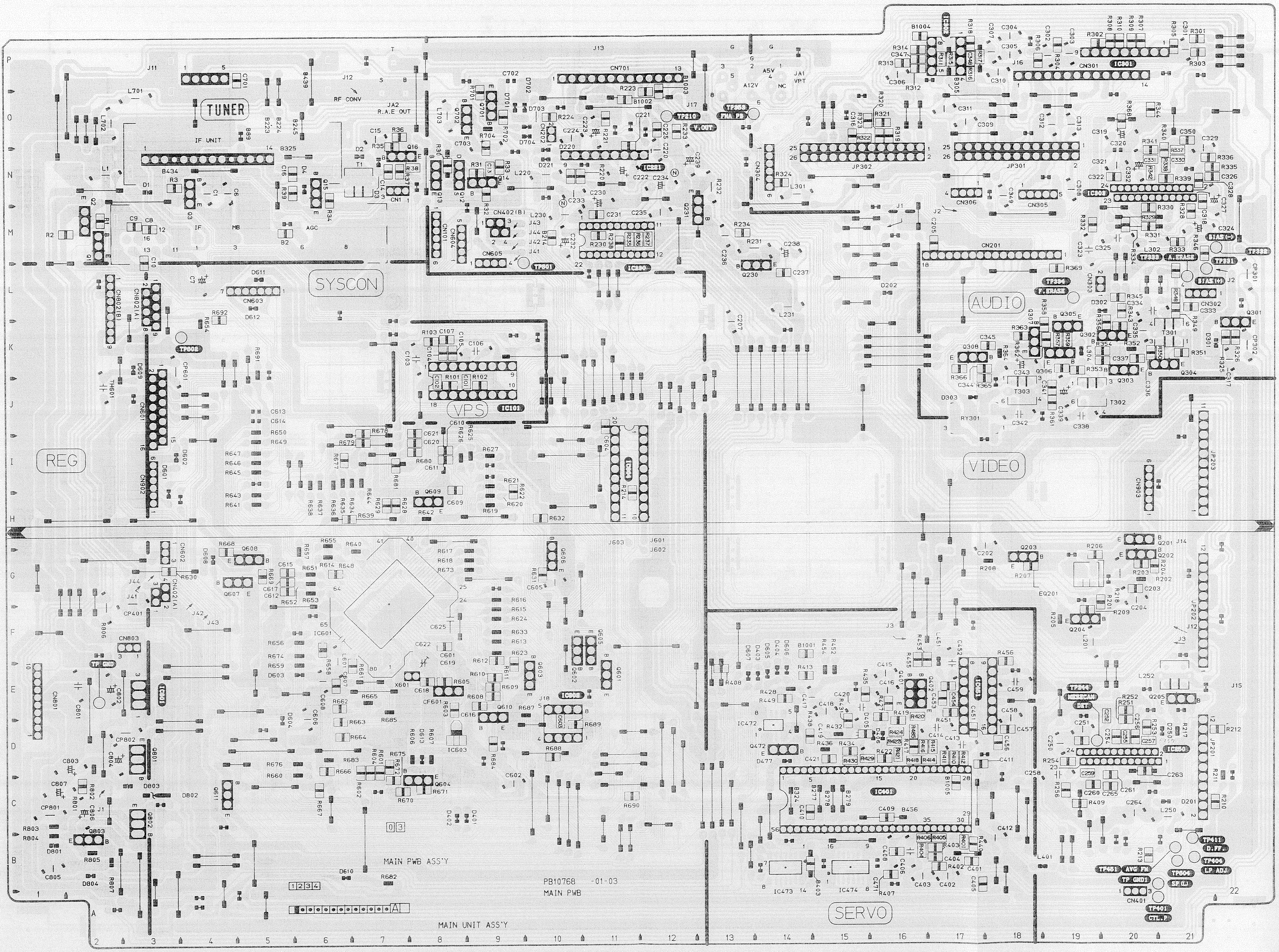
REF. No.	LOCATION
CONNECTOR	
CN1	7N
CN201	18M
CN202	100
CN301	19P
CN302	21L
CN303	19L
CN304	14N
CN305	18N
CN401	20A
CN402	3G
CN601	3J
CN602	3G
CN603	5L
CN604	8M
CN701	11P
CN802	3L

REF. No.	LOCATION
CP	
CP401	3F
CP601	4K
CP801	1C
CP802	3D

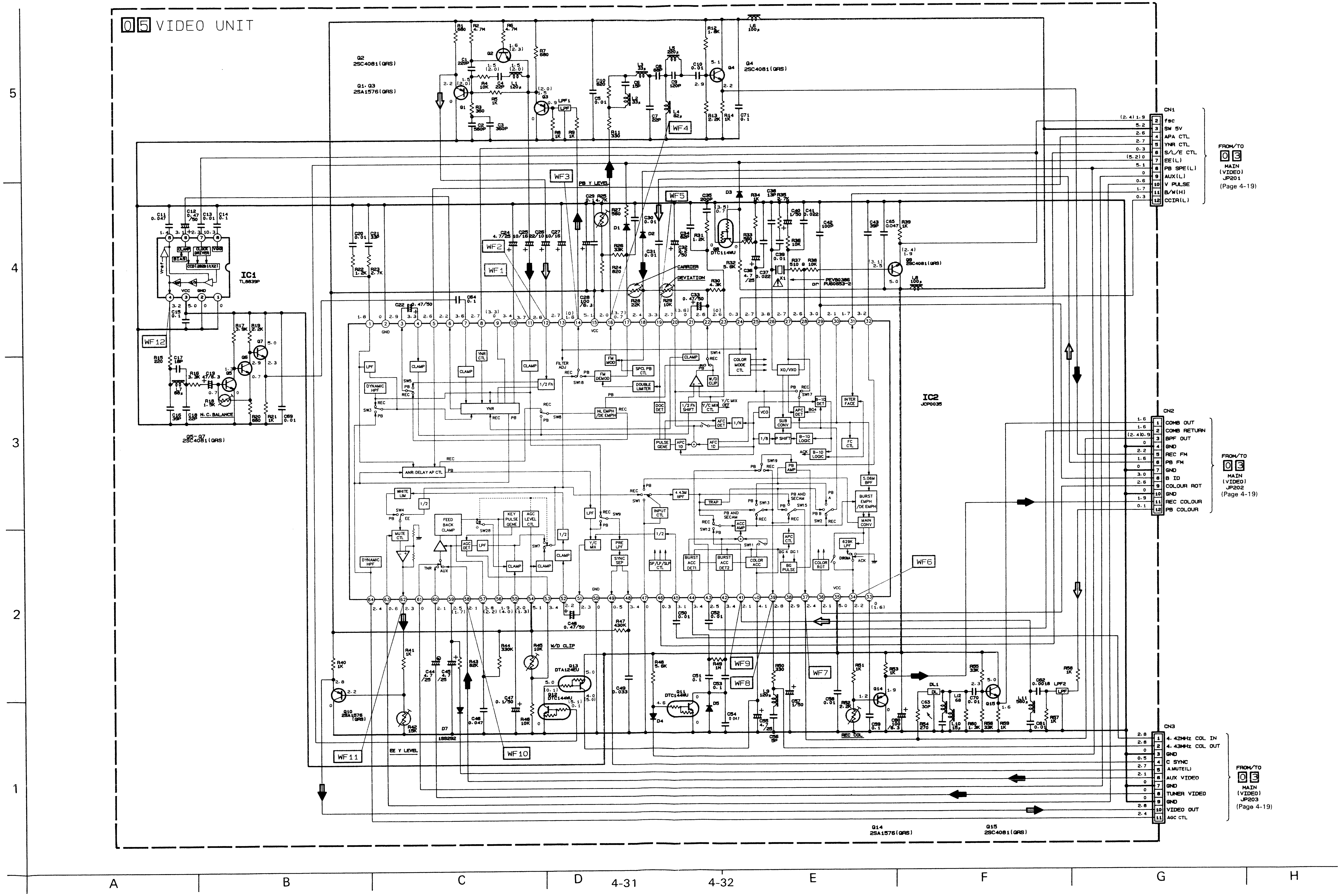
REF. No.	LOCATION
TEST POINT	
TP210	120
TP333	21L
TP334	19L
TP353	140
TP401	20A
TP451	21B
TP604	21B
TPGND	2E

REF. No.	LOCATION
ADJUSTMENT	
C619	8E

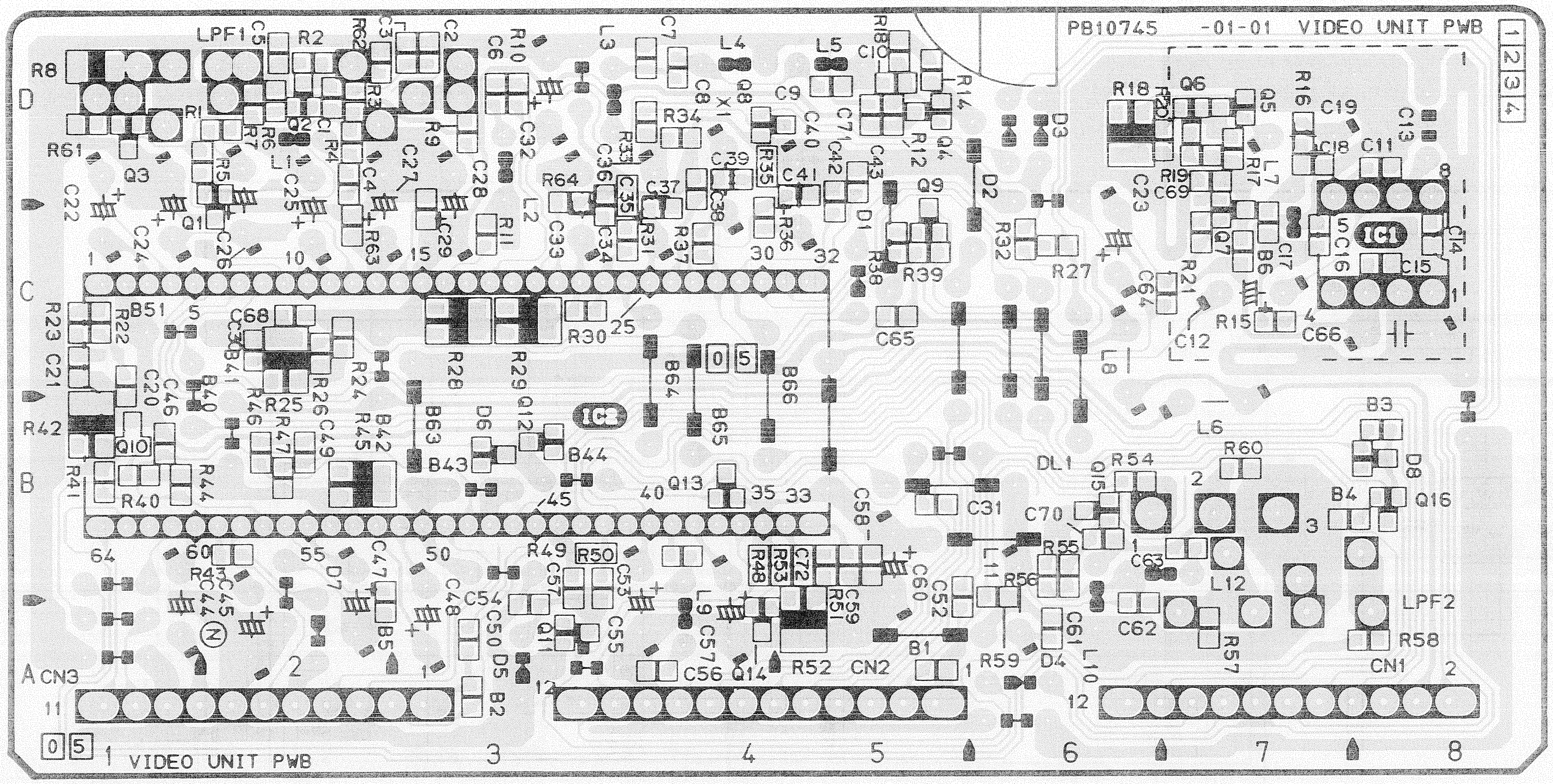
4.13 MAIN CIRCUIT BOARD


TUNER
SYSCON
VPS
REG
AUDIO
VIDEO
SERVO
IF UNIT
MAIN PWB ASS'Y
MAIN UNIT ASS'Y
PB10768 -01-03
MAIN PWB

4.14 VIDEO UNIT SCHEMATIC DIAGRAM


05 VIDEO UNIT
Q2 2SC4081(QRS)
Q1, Q3 2SA1576(QRS)
Q4 2SC4081(QRS)
IC1 TL8839P
CLAMP
CLOCK DRIVER
VDD
BIAS
CCD(282bitX2)
Vref
VCC
GND
Q5-Q7 2SC4081(QRS)
N. C. BALANCE
WF1
WF2
WF3
WF4
WF5
WF6
WF7
WF8
WF9
WF10
WF11
WF12
PB Y LEVEL
CARRIER
DEVIATION
Q8 DTC114WU
Q9 2SC4081(QRS)
X1
PEV80386 or PU60853-2
IC2 JCP0035
LPF
DYNAMIC HPF
CLAMP
YNR CTL
YNR
1/2 Fh
FILTER ADJ
FM MOD
FM DEMOD
SPCL PB CTL
DOUBLE LIMITER
NL EMPH /DE EMPH
DOC DET
PULSE GENE
APC 1D
AFC 1D
1/2 Fh SHIFT
Y/C MIX CTL
W/D CLIP
COLOR MODE CTL
XO/VXO
VCO
APC DET
B-1D DET
INTER FACE
SUB CONV
1/8
P SHIFT
B-1D LOGIC
FC CTL
ANR: DELAY AP CTL
WHITE LIM
1/2
MUTE CTL
FEED BACK CLAMP
KEY PULSE GENE
AGC LEVEL CTL
AGC DET
Y/C MIX
4.43M BPF
TRAP
INPUT CTL
PB AND SECAM
ACC AMP
PRE LPF
SYNC SEP
SP/LP/SLP CTL
BURST ACC DET1
BURST ACC DET2
COLOR ACC
APC CTL
BG PULSE
COLOR ROT
PB AMP
5.06M BPF
BURST EMPH /DE EMPH
MAIN CONV
629K LPF
CHROMA
W/D CLIP
Q13 DTA124EU
Q12 DTC144WU
Q11 DTC144WU
Q10 2SA1576(QRS)
D7 1SS292
EE Y LEVEL
REC COL
DL1
LPF2
Q14 2SA1576(QRS)
Q15 2SC4081(QRS)
CN1
fsc
SW 5V
APA CTL
YNR CTL
S/L/E CTL
EE(L)
PB SPE(L)
AUX(L)
V PULSE
B/W(H)
CCIR(L)
FROM/TO 03 MAIN (VIDEO) JP201 (Page 4-19)
CN2
COMB OUT
COMB RETURN
BPF OUT
GND
REC FM
PB FM
GND
B ID
COLOUR ROT
GND
REC COLOUR
PB COLOUR
FROM/TO 03 MAIN (VIDEO) JP202 (Page 4-19)
CN3
4.43MHz COL IN
4.43MHz COL OUT
GND
C SYNC
A.MUTE(L)
AUX VIDEO
GND
TUNER VIDEO
GND
VIDEO OUT
AGC CTL
FROM/TO 03 MAIN (VIDEO) JP203 (Page 4-19)
1
2
3
4
5
A
B
C
D
E
F
G
H

4.15 VIDEO UNIT CIRCUIT BOARD


PB10745 -01-01 VIDEO UNIT PWB
1 2 3 4
D
C
B
A
1
3
4
5
6
7
8
0 5
1 VIDEO UNIT PWB
CN1
CN2
CN3
LPF1
LPF2
IC1
IC2
DL1
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q12
Q13
Q14
Q15
Q16
D1
D2
D3
D4
D5
D6
D7
D8
L1
L2
L3
L4
L5
L6
L7
L8
L9
L10
L11
L12
X1
B1
B2
B3
B4
B5
B6
B40
B41
B42
B43
B44
B51
B63
B64
B65
B66
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R14
R15
R16
R17
R18
R19
R20
R21
R22
R23
R24
R25
R26
R27
R28
R29
R30
R31
R32
R33
R34
R35
R36
R37
R38
R39
R40
R41
R42
R43
R44
R45
R46
R47
R48
R49
R50
R51
R52
R53
R54
R55
R56
R57
R58
R59
R60
R61
R62
R63
R64
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15
C16
C17
C18
C19
C20
C21
C22
C23
C24
C25
C26
C27
C28
C29
C30
C31
C32
C33
C34
C35
C36
C37
C38
C39
C40
C41
C42
C43
C44
C45
C46
C47
C48
C49
C50
C52
C53
C54
C55
C56
C57
C58
C59
C60
C61
C62
C63
C64
C65
C66
C68
C69
C70
C72

MAIN COMPONENT PARTS LOCATION GUIDE

<VIDEO UNIT PWB>

REF No.	LOCATION
DIODE	
IC1	8C
IC2	3B

REF No.	LOCATION
TRANSISTOR	
Q1	2C
Q2	2D
Q3	1D
Q4	5D
Q5	7D
Q6	7D
Q7	7C
Q8	4D
Q9	5C
Q10	1B
Q11	3A
Q12	3B
Q13	4B
Q14	4A
Q15	6B

REF No.	LOCATION
DIODE	
D1	5C
D2	6D
D3	6D
D4	6A
D5	3A
D7	2B

REF No.	LOCATION
CONNECTOR	
CN1	7A
CN2	4A
CN3	2A

REF No.	LOCATION
ADJUSTMENT	
R18	6D
R25	2C
R28	3C
R29	3C
R42	1B
R45	2B
R52	5A

LEADLESS COMPONENT PARTS LOCATION GUIDE

<VIDEO UNIT PWB>

REF No.	LOCATION
TRANSISTOR	
Q1	1C
Q2	2D
Q3	1D
Q4	5D
Q5	7D
Q6	7D
Q7	7C
Q8	4D
Q9	5C
Q10	1B
Q11	3A
Q12	3B
Q13	4B
Q14	4A
Q15	6B
Q16	8B

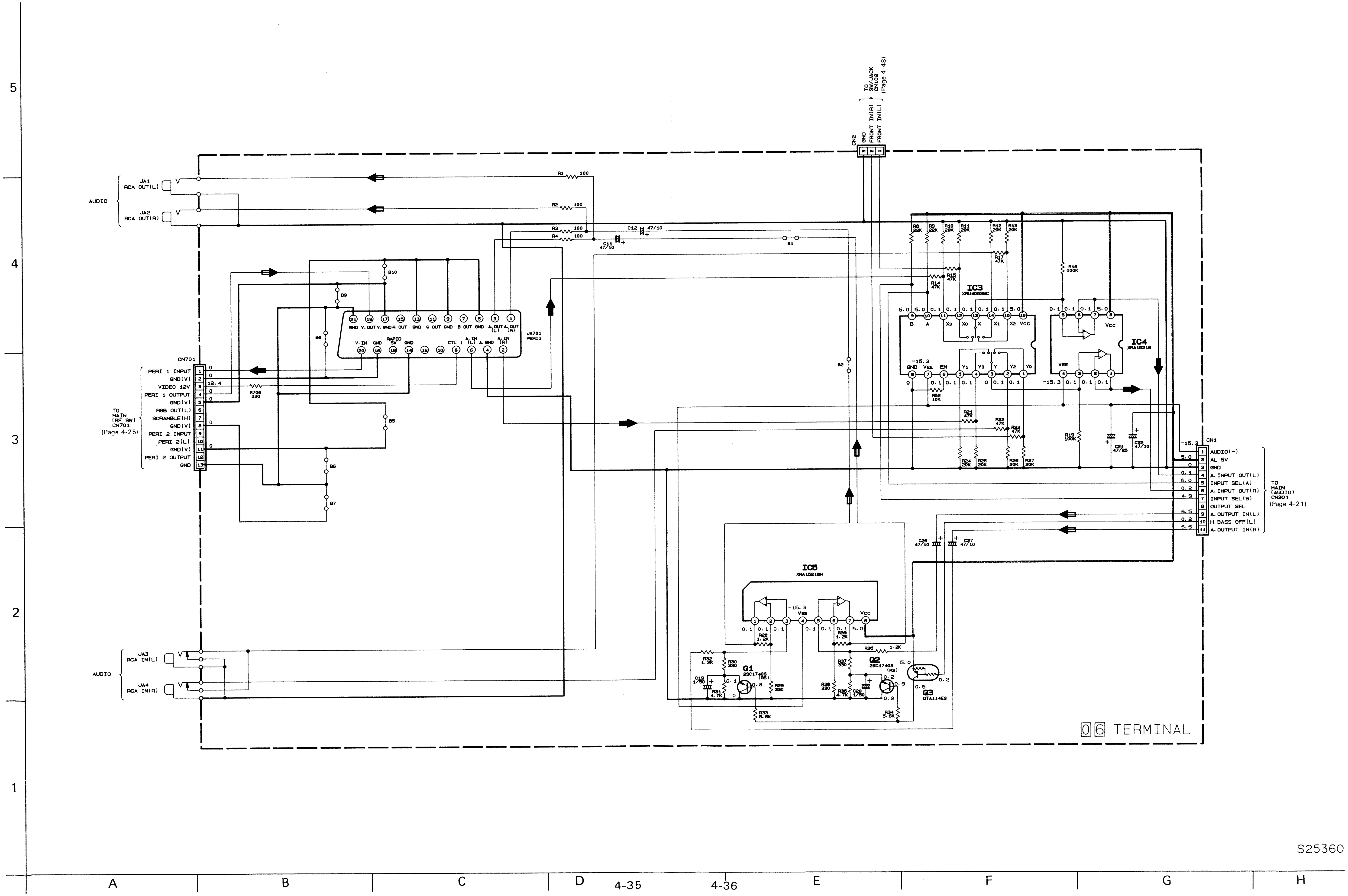
REF No.	LOCATION
DIODE	
D6	3B
D8	8B

REF No.	LOCATION
RESISTOR	
R1	2D
R2	2D
R3	2D
R4	2D
R5	1D
R6	2D
R7	2D
R8	1D
R9	3D
R10	3D
R11	3C
R12	5D
R13	5D
R14	5D
R15	7C
R16	7D
R17	7D
R18	5D
R19	7D
R20	7D
R21	7C
R22	1C
R23	1C
R24	2C
R26	2C
R27	6C
R30	4C
R31	4C
R32	6C
R33	4D
R34	4D
R35	4D
R36	4C
R37	4C
R38	5C
R39	5C
R40	1B
R41	1B
R43	2B
R44	1B
R46	2B
R47	2B
R48	4B
R49	4B
R50	4B
R51	5B
R53	5B
R54	6B
R55	6B
R56	6B
R57	7A
R58	8A
R59	6A
R60	7B
R61	1D
R62	2D
R63	2C
R64	3D

REF No.	LOCATION
CAPACITOR	
C1	2D
C2	3D
C3	3D
C4	2D
C5	2D
C6	3D
C7	4D
C8	4D
C9	5D
C10	5D
C11	7D
C14	8C
C15	8C
C16	7C
C17	7C
C18	7D
C20	1C
C21	1C
C29	3C
C30	2C
C31	5B
C34	4C
C35	4D
C37	4C
C38	4D
C39	4D
C41	5D
C42	5D
C43	5D
C46	1B
C49	2B
C50	3A
C51	3B
C52	5A
C53	4B
C54	3A
C56	4A
C58	5B
C59	5B
C61	6A
C62	6A
C63	7B
C64	7C
C65	5C
C68	2C
C69	7D
C70	6B
C71	5D
C72	5B

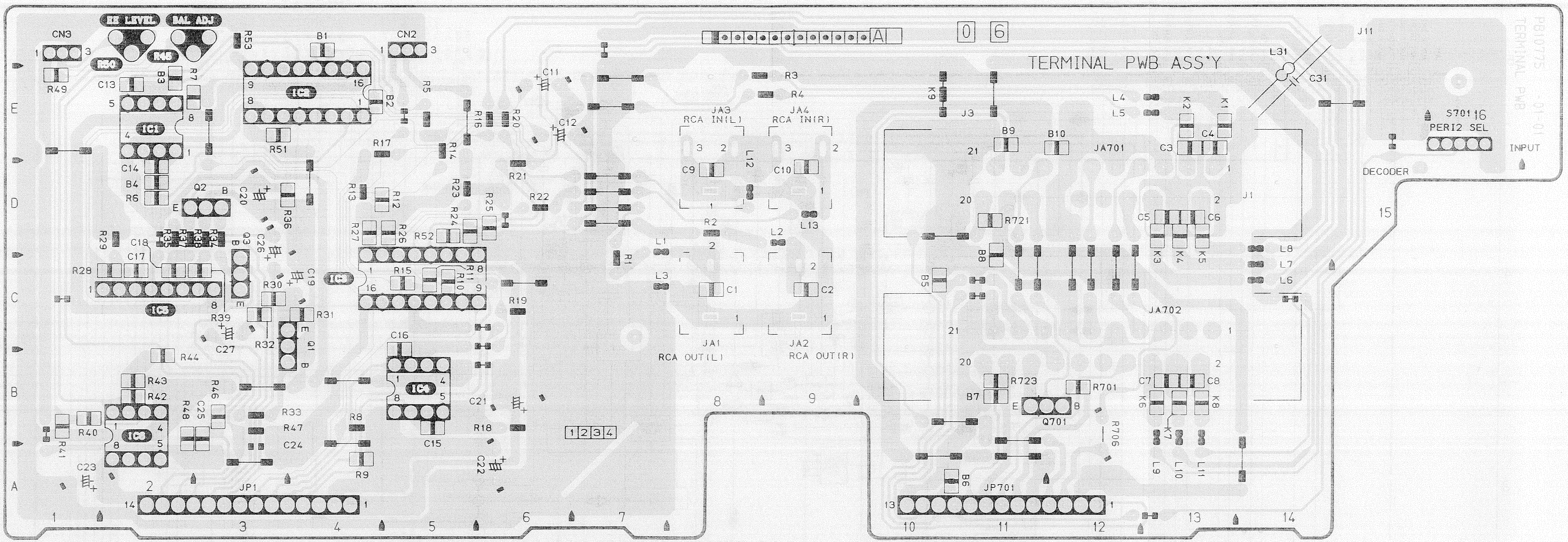
REF No.	LOCATION
ADJUSTMENTS	
R18	6D
R25	2C
R28	3C
R29	3C
R42	1B
R45	2B
R52	5A

4.16 TERMINAL SCHEMATIC DIAGRAM



AUDIO
JA1 RCA OUT(L)
JA2 RCA OUT(R)
JA3 RCA IN(L)
JA4 RCA IN(R)
TO SW/JACK CN102 (Page 4-48)
CN2
GND
FRONT IN(R)
FRONT IN(L)
CN701
PERI 1 INPUT
GND(V)
VIDEO 12V
PERI 1 OUTPUT
GND(V)
RGB OUT(L)
SCRAMBLE(H)
GND(V)
PERI 2 INPUT
PERI 2(L)
GND(V)
PERI 2 OUTPUT
GND
TO MAIN (RF SW) CN701 (Page 4-25)
JA701 PERI1
IC3 XRU4052BC
IC4 XRA15218
IC5 XRA15218N
Q1 2SC1740S (RS)
Q2 2SC1740S (RS)
Q3 DTA114ES
CN1
AUDIO(-)
AL 5V
GND
A. INPUT OUT(L)
INPUT SEL(A)
A. INPUT OUT(R)
INPUT SEL(B)
OUTPUT SEL
A. OUTPUT IN(L)
H. BASS OFF(L)
A. OUTPUT IN(R)
TO MAIN (AUDIO) CN301 (Page 4-21)
06 TERMINAL
S25360
5
4
3
2
1
A
B
C
D
E
F
G
H

4.17 TERMINAL CIRCUIT BOARD


TERMINAL PWB ASS'Y
PB10775 -01-01
TERMINAL PWB
0 6
A
EE LEVEL
BAL ADJ
R50
R45
CN3
CN2
CN1
B1
R53
IC1
IC2
IC3
IC4
IC5
IC6
Q1
Q2
Q3
Q701
JP1
JP701
JA1
RCA OUT(L)
JA2
RCA OUT(R)
JA3
RCA IN(L)
JA4
RCA IN(R)
JA701
JA702
J1
J3
J11
L31
C31
S701
PERI2 SEL
INPUT
DECODER
R701
R706
R721
R723
1234
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

LEADLESS COMPONENT PARTS
LOCATION GUIDE<TERMINAL PWB>

REF. No.	LOCATION
RESISTOR	
R6	2D
R7	2E
R9	4A
R10	5C
R11	5C
R12	4D
R15	5C
R24	5D
R25	6D
R26	5D
R27	4D
R28	2C
R30	3C
R31	4C
R32	3C
R36	3D
R40	1B
R41	1B
R42	2B
R43	2B
R44	2B
R46	3B
R48	2B
R49	1E
R51	3E
R52	5D
R701	12B
R721	11D
R723	11B

REF. No.	LOCATION
CAPACITOR	
C1	8C
C2	9C
C3	13E
C4	13E
C5	13D
C6	13D
C7	13B
C8	13B
C9	8D
C10	9D
C13	2E
C14	2D
C15	5B
C16	5C
C17	2C
C18	2C
C25	3B
C39	3C

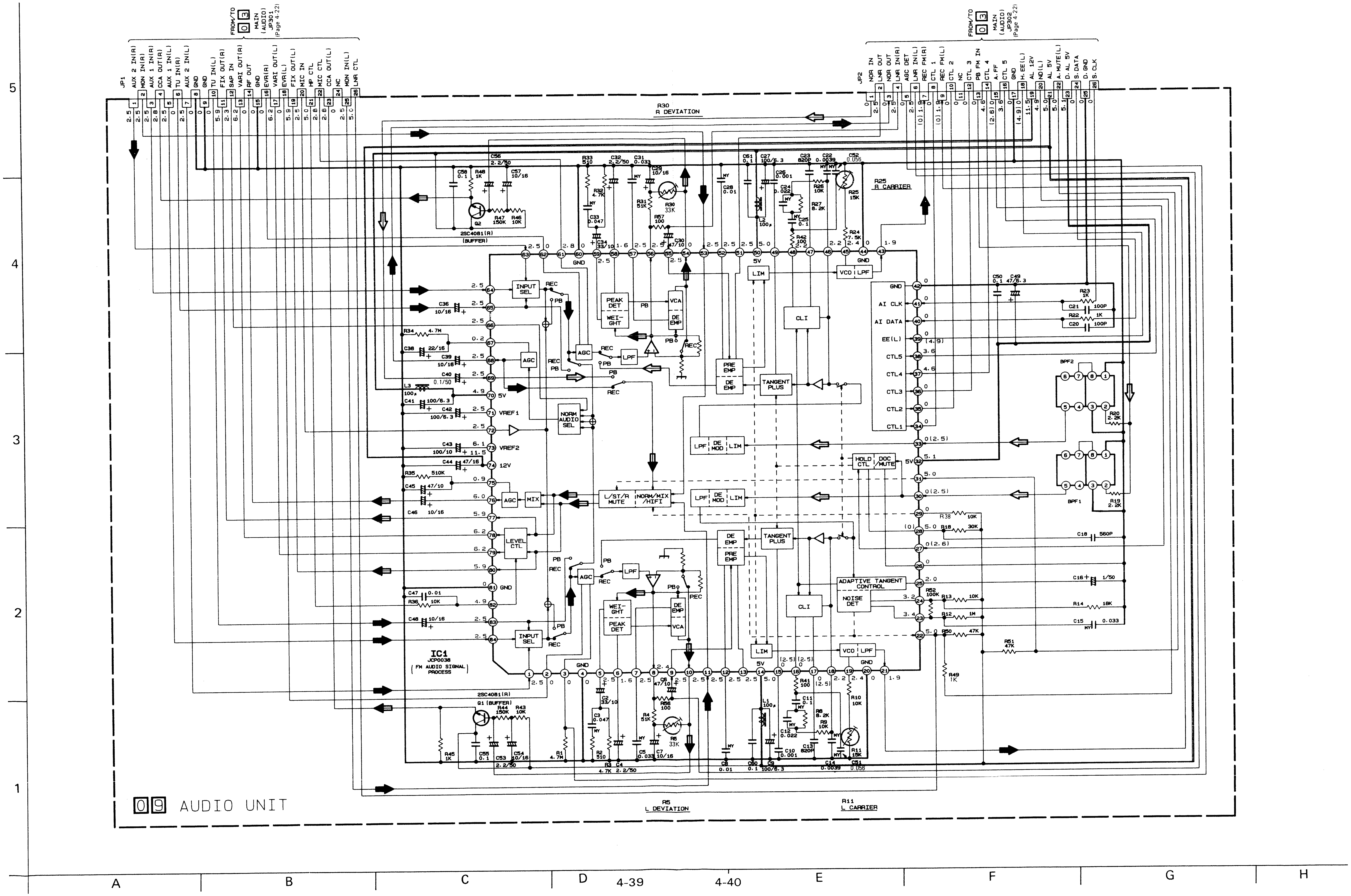
MAIN COMPONENT PARTS
LOCATION GUIDE<TERMINAL PWB>

REF. No.	LOCATION
IC	
IC3	5C
IC4	5B
IC5	2C

REF. No.	LOCATION
TRANSISTOR	
Q1	3C
Q2	3D
Q3	3C

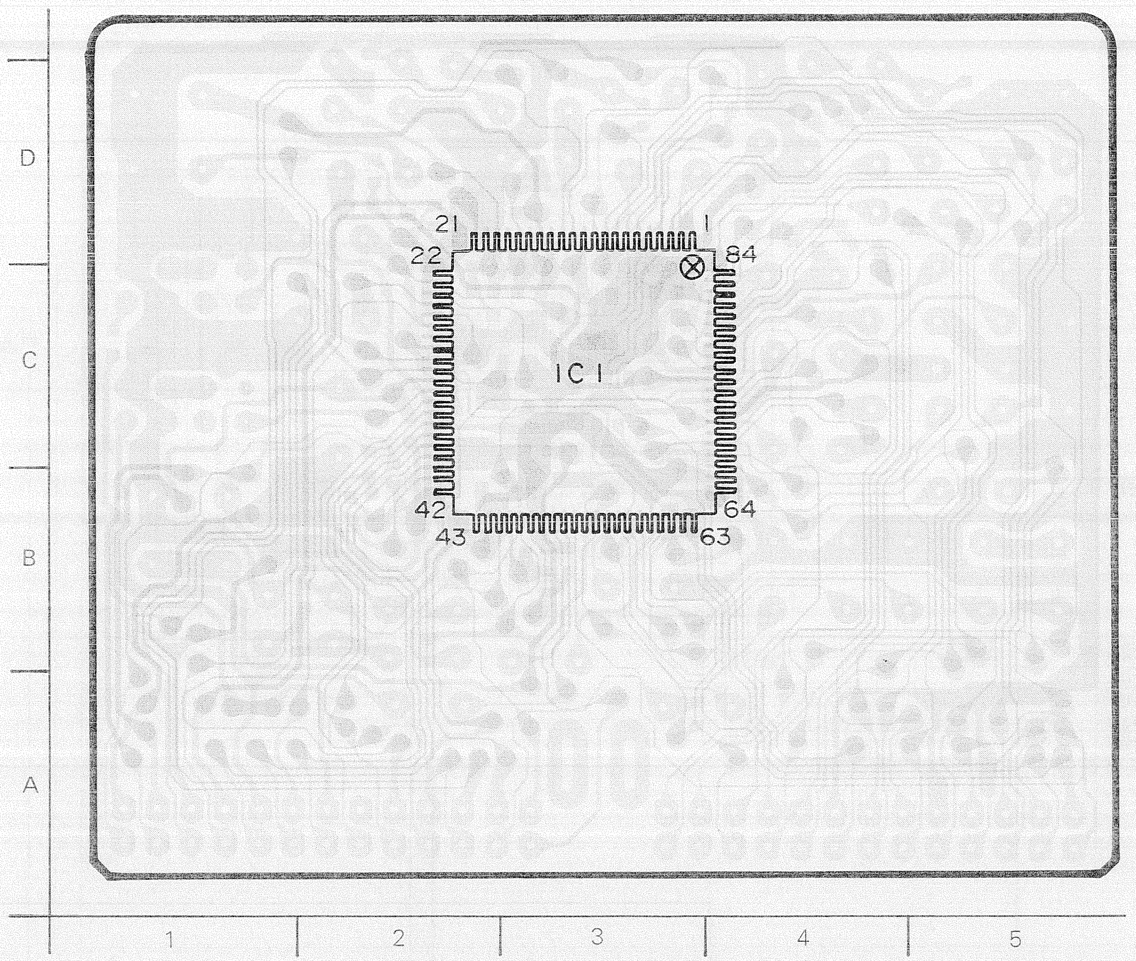
REF. No.	LOCATION
CONNECTOR	
CN1	3A
CN2	5F
CN701	11A

4.18 AUDIO UNIT SCHEMATIC DIAGRAM

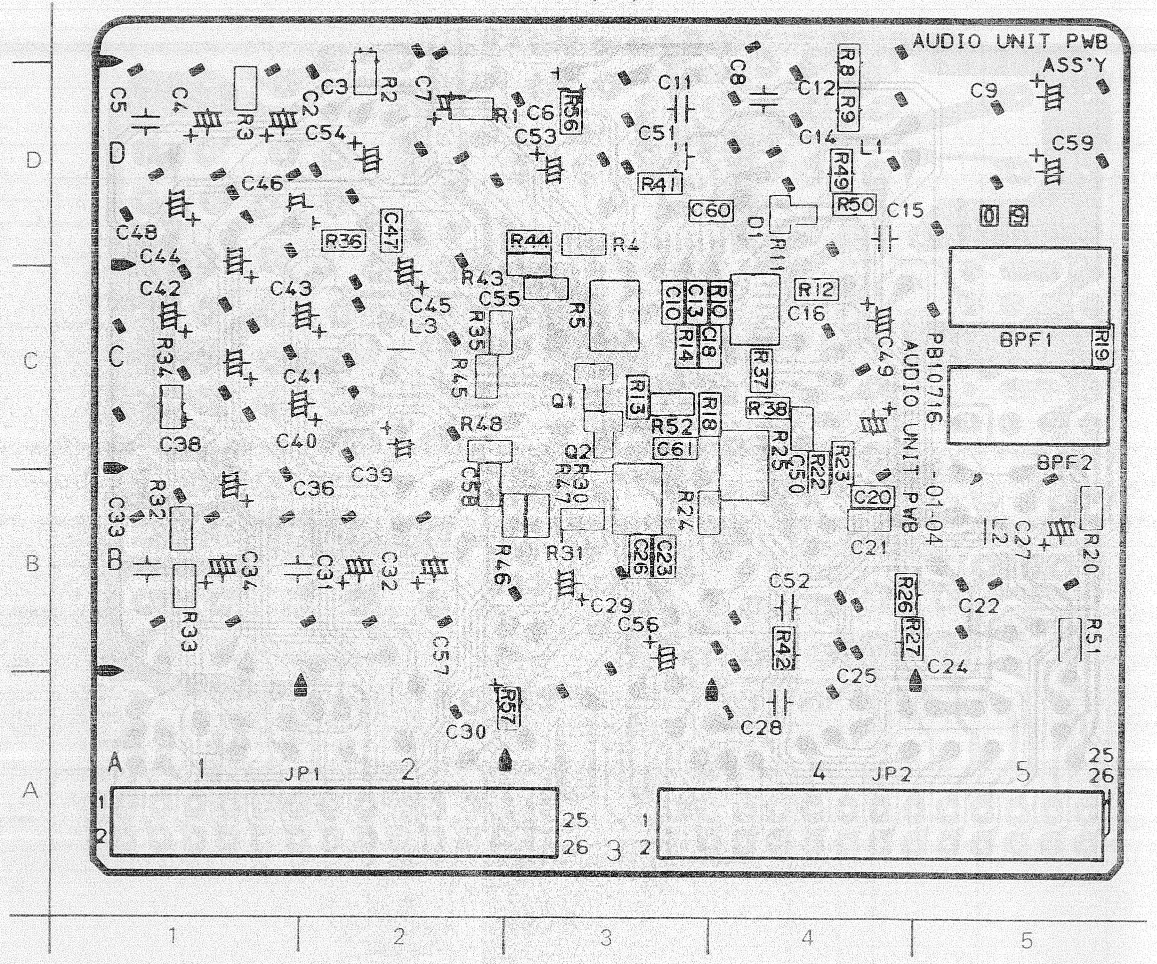

FROM/TO 03 MAIN (AUDIO) JP301 (Page 4-22)
JP1
1 AUX 2 IN(R) 2.5
2 MON IN(R) 2.5
3 AUX 1 IN(R) 2.5
4 CCA OUT(R) 2.8
5 AUX 1 IN(L) 2.5
6 TU IN(R) 0
7 AUX 2 IN(L) 2.5
8 GND 0
9 GND 0
10 TU IN(L) 0
11 FIX OUT(R) 5.9
12 SAP IN 2.3
13 VARI OUT(R) 6.2
14 RF OUT 0
15 GND 0
16 EVR(R) 0
17 VARI OUT(L) 6.2
18 EVR(L) 0
19 FIX OUT(L) 5.9
20 MIC IN 2.5
21 HP CTL 5.0
22 MIC CTL 2.8
23 CCA OUT(L) 2.8
24 NC 0
25 MON IN(L) 2.5
26 LNR CTL 5.0
FROM/TO 03 MAIN (AUDIO) JP302 (Page 4-22)
JP2
1 NOR IN 0
2 LNR OUT 2.5
3 NOR OUT 0
4 LNR IN(R) 2.5
5 AGC DET 0
6 LNR IN(L) 2.5
7 REC FM(R) (0) 1.9
8 CTL 1 0
9 REC FM(L) (0) 1.9
10 CTL 2 0
11 NC 0
12 CTL 3 0
13 PB FM IN 0
14 CTL 4 4.6
15 A.FF (2.6) 0
16 CTL 5 3.6
17 GND 0
18 H.EE(L) (4.9) 0
19 AL 12V 11.5
20 ND(L) 4.9
21 AL 5V 5.0
22 A.MUTE(L) 5.0
23 D.AL 5V 5.1
24 S.DATA 0
25 D.GND 0
26 S.CLK 0
R30 R DEVIATION
R25 R CARRIER
R5 L DEVIATION
R11 L CARRIER
IC1 JCP0038 (FM AUDIO SIGNAL PROCESS)
Q2 2SC4081(R) (BUFFER)
Q1 2SC4081(R) (BUFFER)
INPUT SEL
REC
PB
AGC
LPF
PEAK DET
WEI-GHT
VCA
DE EMP
PRE EMP
LIM
CLI
VCO
TANGENT PLUS
NORM AUDIO SEL
LEVEL CTL
MIX
L/ST/R MUTE
NORM/MIX /HIFI
LPF DE MOD LIM
HOLD CTL
DOC MUTE
ADAPTIVE TANGENT CONTROL
NOISE DET
GND
AI CLK
AI DATA
EE(L)
CTL5
CTL4
CTL3
CTL2
CTL1
5V
VREF1
VREF2
12V
BPF1
BPF2
C56 2.2/50
C58 0.1
R48 1K
C57 10/16
R47 150K
R46 10K
R33 510
C32 2.2/50
C31 0.033
C29 10/16
R32 4.7K
C33 0.047
R31 51K
R30 33K
R57 100
C34 33/10
C30 47/10
C61 0.1
C27 100/6.3
C28 0.01
L2 100μ
C26 0.001
C24 0.022
C23 820P
C22 0.0039
C52 0.056
R26 10K
R27 8.2K
R25 15K
C25 0.1
R42 100
R24 7.5K
C36 10/16
R34 4.7M
C38 22/16
C39 10/16
C40 0.1/50
L3 100μ
C41 100/6.3
C42 100/6.3
C43 100/10
C44 47/16
R35 510K
C45 47/10
C46 10/16
C47 0.01
R36 10K
C48 10/16
C50 0.1
C49 47/6.3
R23 1K
C21 100P
R22 1K
C20 100P
R20 2.2K
R19 2.2K
R38 10K
R18 30K
C18 560P
C16 1/50
R52 100K
R13 10K
R14 18K
R12 1M
C15 0.033
R50 47K
R51 47K
R49 1K
R44 150K
R43 10K
R45 1K
C55 0.1
C53 2.2/50
C54 10/16
R1 4.7M
C2 33/10
C3 0.047
R2 510
R3 4.7K
C4 2.2/50
R56 100
R4 51K
R6 33K
C5 0.033
C7 10/16
C6 47/10
C8 0.01
C60 0.1
C9 100/6.3
L1 100μ
R41 100
C11 0.1
C12 0.022
C10 0.001
R8 8.2K
R9 10K
C13 820P
C14 0.0039
R10 10K
R11 15K
C51 0.056
MY
09 AUDIO UNIT
A B C D E F G H
1 2 3 4 5

4.19 AUDIO UNIT CIRCUIT BOARD

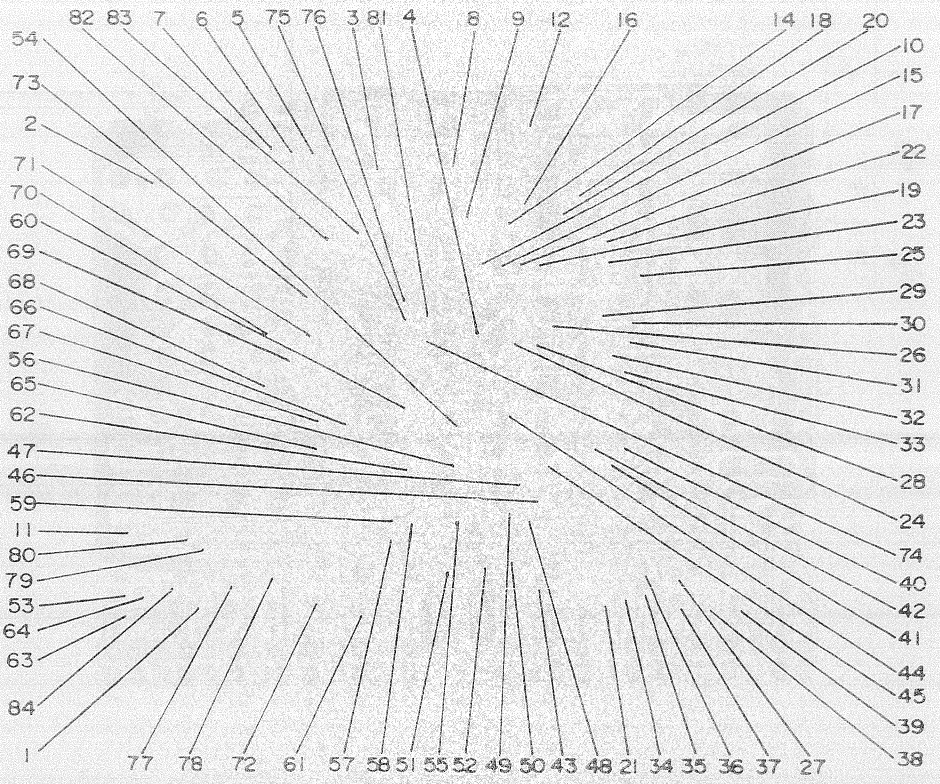
— COMPONENT SIDE —
(A)


D
C
B
A
21
1
22
84
IC1
42
64
43
63
1
2
3
4
5

— FOIL SIDE —
(B)


AUDIO UNIT PWB ASS'Y
PB10716-01-04 AUDIO UNIT PWB
D
C
B
A
C5
C4
R3
C2
C3
R2
C7
R1
C6
R56
C53
C54
C11
C8
C12
R8
R9
C9
C51
C14
L1
C59
C46
R41
R49
R50
C15
C60
D1
R11
C48
C44
R36
C47
R44
R4
C42
C43
R43
C55
C45
L3
R35
R5
C10
C13
C18
R10
R14
R12
C16
C49
BPF1
R19
C34
R34
C41
R45
Q1
R13
R18
R37
R38
C38
C40
R48
Q2
R52
C61
R25
C50
R22
R23
BPF2
C39
C36
C58
R47
R30
R24
C20
C21
L2
C27
R20
R32
C33
R31
C26
C23
C52
R26
R27
C22
C31
C32
C34
R46
C29
C56
R42
R51
R33
C57
C24
C25
R57
C28
C30
JP1
JP2
1
2
3
4
5
25
26

— IC PIN NUMBER LOCATION (FOIL SIDE) —


82
83
7
6
5
75
76
3
81
4
8
9
12
16
14
18
20
54
73
2
71
70
60
69
68
66
67
56
65
62
47
46
59
11
80
79
53
64
63
84
1
10
15
17
22
19
23
25
29
30
26
31
32
33
28
24
74
40
42
41
44
45
39
38
77
78
72
61
57
58
51
55
52
49
50
43
48
21
34
35
36
37
27

LEADLESS COMPONENT PARTS LOCATION GUIDE
<AUDIO UNIT PWB>

REF. No.	LOCATION
TRANSISTOR	
Q1	B-3C
Q2	B-3C

REF. No.	LOCATION
DIODE	
D1	B-4D

REF. No.	LOCATION
RESISTOR	
R1	B-2D
R2	B-2D
R3	B-1D
R4	B-3D
R5	B-3C
R8	B-4D
R9	B-4D
R10	B-4C
R11	B-4C
R12	B-4C
R13	B-3C
R14	B-3C
R18	B-3C
R19	B-5C
R20	B-5B

REF. No.	LOCATION
RESISTOR	
R22	B-4B
R23	B-4B
R24	B-3B
R25	B-4C
R26	B-4B
R27	B-4B
R30	B-3B
R31	B-3B
R32	B-1B
R33	B-1B
R34	B-1C
R35	B-2C
R36	B-2D
R37	B-4C
R38	B-4C

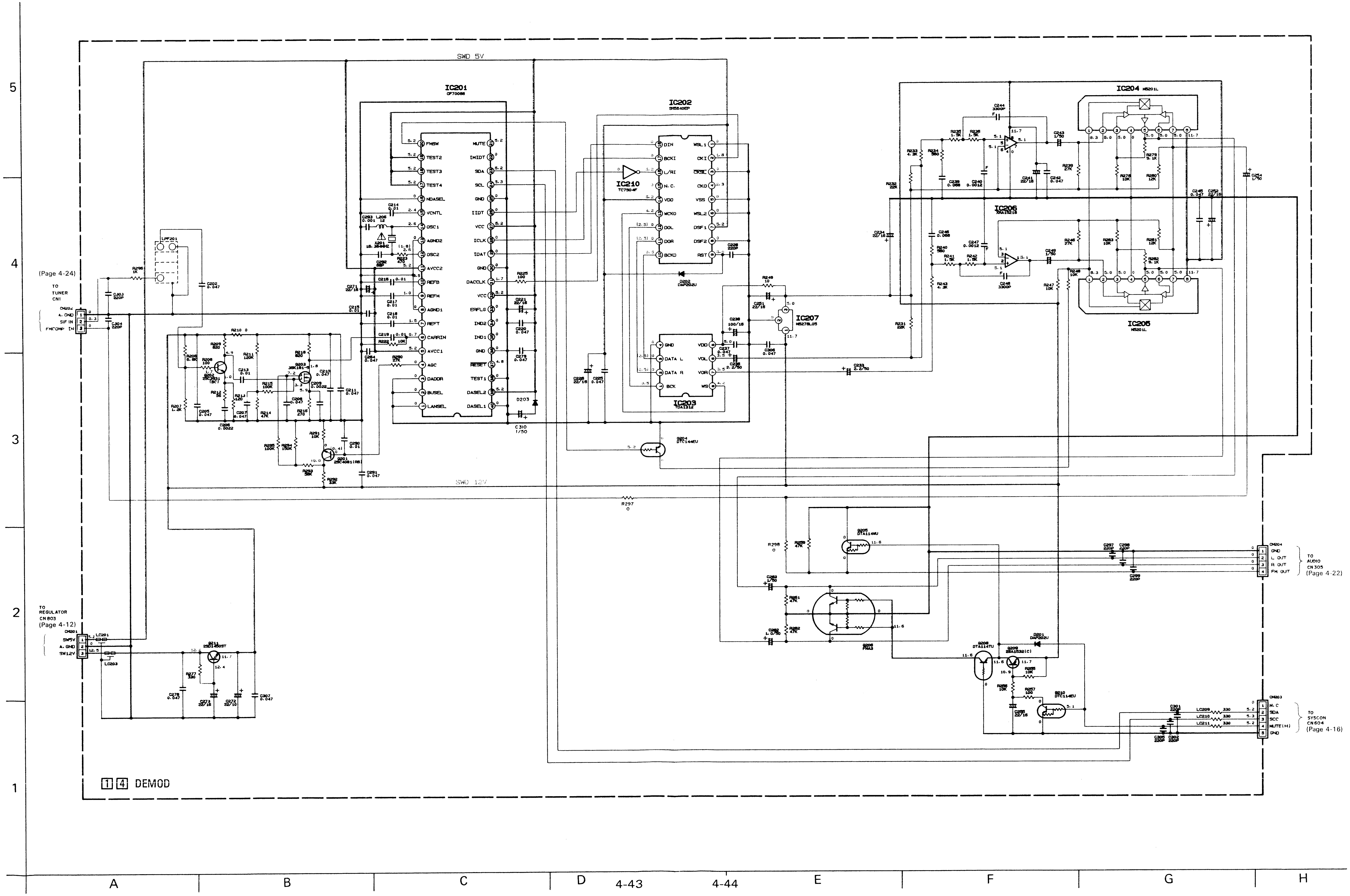
REF. No.	LOCATION
RESISTOR	
R41	B-3D
R42	B-4B
R43	B-2C
R44	B-3D
R45	B-2C
R46	B-3B
R47	B-3B
R48	B-2C
R49	B-4D
R50	B-4D
R51	B-5B
R52	B-3C
R56	B-3D
R57	B-3A

REF. No.	LOCATION
CAPACITOR	
C10	B-3C
C13	B-3C
C18	B-3C
C20	B-4B
C21	B-4B
C23	B-3B
C26	B-3B
C47	B-2D
C50	B-4C
C58	B-2B
C60	B-3D
C61	B-3C

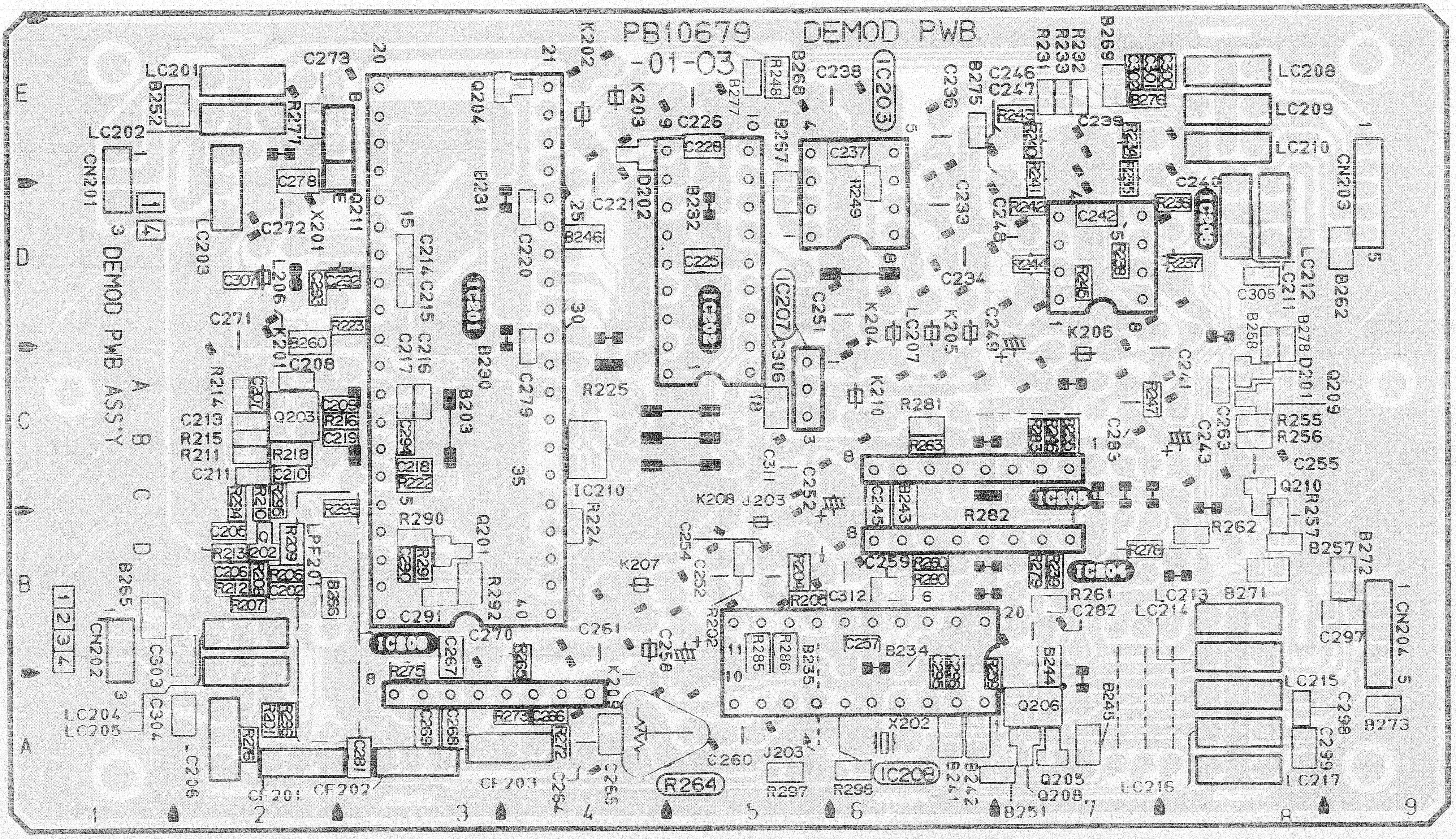
MAIN COMPONENT PARTS LOCATION GUIDE
<AUDIO UNIT PW

REF. No.	LOCATION
IC	
IC1	A-3C
TRANSISTOR	
Q1	B-3C
Q2	B-3C
DIODE	
D1	B-4D
CONNECTOR	
JP1	B-2A
JP2	B-4A
ADJUSTMENT	
R5	B-3C
R11	B-4C
R25	B-3B
R30	B-3B

4.20 DEMODULATOR SCHEMATIC DIAGRAM


SWD 5V
SWD 12V
IC201
CF70088
IC202
SM5840EP
IC203
TDA1312
IC204
M5201L
IC205
M5201L
IC206
NJM4558
IC207
M5278L05
IC210
TC7S04F
LPF201
X201
D202
DAP202U
D203
Q201
2SC4081(R8)
Q202
2SC3931
Q203
3SK181
Q204
DTC144EU
Q205
DTA114WU
Q206
FMA3
Q208
DTA114TU
Q209
2SA1532(C)
Q210
DTC144EU
Q211
2SD1460ST
D201
DAP202U
(Page 4-24)
TO TUNER CN1
CN204
A. GND
SIF IN
FMCOMP IN
TO REGULATOR CN803
(Page 4-12)
CN201
SW5V
A. GND
SW12V
LC201
LC203
CN204
GND
L OUT
R OUT
FM OUT
TO AUDIO CN305
(Page 4-22)
CN203
N.C
SDA
SCC
MUTE(H)
GND
TO SYSCON CN604
(Page 4-16)
LC209
LC210
LC211
R297
0
1 4 DEMOD
1
2
3
4
5
A
B
C
D
E
F
G
H

4.21 DEMODULATOR CIRCUIT BOARD


PB10679 DEMOD PWB
-01-03
DEMOD PWB ASS'Y
E
D
C
B
A
1
2
3
4
5
6
7
8
9
A B C D
IC201
IC202
IC203
IC204
IC205
IC206
IC207
IC208
IC210
Q201
Q204
Q205
Q206
Q208
Q209
Q210
Q211
CN201
CN202
CN203
CN204
LC201
LC202
LC203
LC204
LC205
LC206
LC207
LC208
LC209
LC210
LC211
LC212
LC213
LC214
LC215
LC216
LC217
LPF201
X201
X202
CF201
CF202
CF203
K201
K202
K203
K204
K205
K206
K207
K208
K209
K210
J203
D201
D202
R225
R264
R281
R282
R290
R292
R297
R298
C221
C226
C238
C246
C247
C251
C260
C261
C270
C271
C272
C273
C297
C305
C306
C311
B257
B262
B271
B272
B273
B251

LEADLESS COMPONENT PARTS
LOCATION GUIDE <DEMODULATOR PWB>

REF No.	LOCATION
TRANSISTOR	
Q201	3B
Q202	2B
Q203	2C
Q204	4E
Q205	7A
Q206	7A
Q208	7A
Q209	8C
Q210	8C
DIODE	
D201	8C
D202	4E

REF No.	LOCATION
RESISTOR	
R202	5B
R204	5B
R205	5B
R206	2B
R207	2B
R208	2B
R209	2B
R210	2B
R211	2C
R212	2B
R213	2B
R214	2C
R215	2C
R216	2C
R218	2C
R222	3C
R223	2D
R231	7E

REF No.	LOCATION
RESISTOR	
R232	7E
R233	7E
R234	7E
R235	7D
R236	8D
R238	7D
R239	7B
R240	7E
R241	7D
R242	7D
R243	7E
R245	7D
R246	7C
R247	7C
R248	5E
R249	6D
R255	8C
R256	8C

REF No.	LOCATION
RESISTOR	
R257	8B
R259	6A
R261	7B
R262	8B
R265	4B
R272	4A
R273	4A
R275	3A
R276	2A
R277	2E
R278	7B
R279	7B
R280	6B
R281	6C
R283	7C
R285	5B
R290	3B
R291	3B

REF No.	LOCATION
RESISTOR	
R292	3B
R293	2C
R294	2B
R295	2B
R296	2A
R298	6A
CAPACITOR	
C202	2B
C205	2B
C206	2B
C207	2C
C208	2C
C209	2C
C210	2C
C211	2C
C213	2C
C214	3D

REF No.	LOCATION
CAPACITOR	
C215	3D
C216	3C
C217	3C
C218	3C
C219	2C
C220	4D
C225	5D
C228	5E
C237	6E
C242	7D
C245	6C
C257	6B
C259	6B
C265	4A
C266	4A
C267	3B
C268	3A
C269	3A

REF No.	LOCATION
CAPACITOR	
C278	2D
C279	4C
C290	3B
C291	3B
C292	2D
C293	2D
C294	3C
C297	9B
C298	7C
C299	8A
C301	7E
C302	7E
C303	2B
C304	2A
C305	8D
C306	5C
C307	2D

MAIN COMPONENT PARTS
LOCATION GUIDE
<DEMODULATOR PWB>

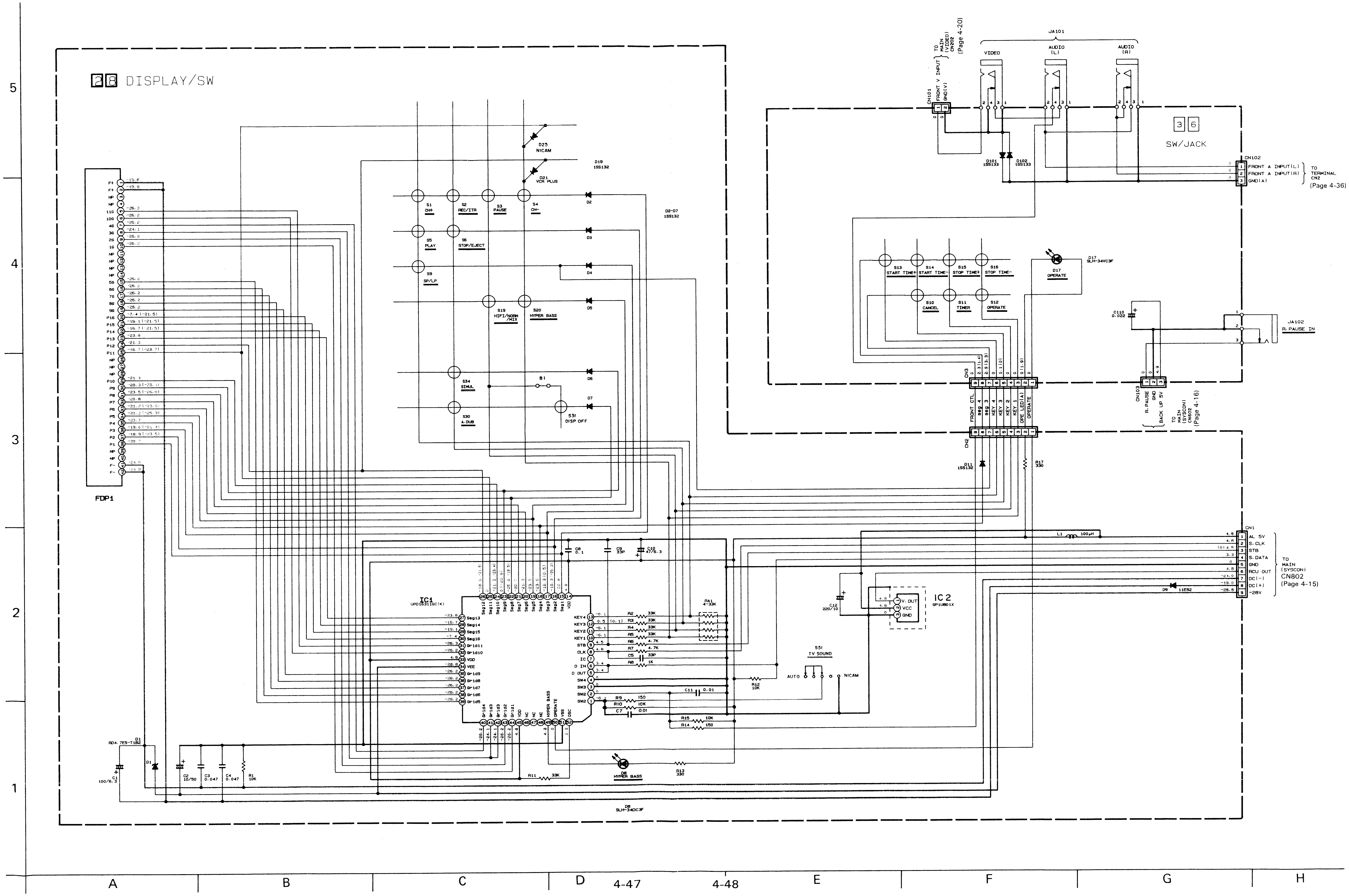
REF. NO.	LOCATION
IC	
IC201	3C
IC202	5D
IC203	6D
IC204	7B
IC205	7B
IC206	8D
IC207	5C
IC210	4C

REF. NO.	LOCATION
TRANSISTOR	
Q201	3B
Q202	2B
Q203	2C
Q204	4E
Q205	7A
Q206	7A
Q208	7A
Q209	8C
Q210	8C
Q211	2E

REF. NO.	LOCATION
DIODE	
D201	8C
D202	4E

REF. NO.	LOCATION
CONNECTOR	
CN201	1D
CN202	1B
CN203	9E
CN204	9B

4.22 DISPLAY/SW & SW/JACK SCHEMATIC DIAGRAMS


28 DISPLAY/SW
FDP1
F+ 1 -19.8
F+ 2 -19.8
NP 3
NP 4
11G 5 -26.3
10G 6 -26.2
4G 7 -26.2
3G 8 -24.1
2G 9 -26.2
1G 10 -26.2
NP 11
NP 12
NP 13
NP 14
5G 15 -26.2
6G 16 -26.2
7G 17 -26.2
8G 18 -26.2
9G 19 -25.2
P16 20 -7.4 (-21.5)
P15 21 -19.1 (-21.5)
P14 22 -16.7 (-21.5)
P13 23 -23.8
P12 24 -21.3
P11 25 -16.7 (-23.7)
NP 26
NP 27
NP 28
P10 29 -21.3
P9 30 -20.3 (-23.4)
P8 31 -23.5 (-26.0)
P7 32 -20.8
P6 33 -21.2 (-23.8)
P5 34 -21.2 (-25.9)
P4 35 -23.7
P3 36 -19.0 (-21.4)
P2 37 -18.9 (-23.5)
P1 38 -20.7
NP 39
NP 40
F- 41 -24.0
F- 42 -24.0
D25 NICAM
D21 VCR PLUS
D19 1SS132
D2-D7 1SS132
S1 CH+
S2 REC/ITR
S3 PAUSE
S4 CH-
S5 PLAY
S6 STOP/EJECT
S9 SP/LP
S19 HIFI/NORM/MIX
S20 HYPER BASS
S34 SIMUL
S30 A.DUB
S31 DISP OFF
B1
D2
D3
D4
D5
D6
D7
IC1
UPD16311GC(K)
Seg12 Seg11 Seg10 Seg9 Seg8 Seg7 Seg6 Seg5 Seg4 Seg3 Seg2 Seg1 VDD
26 25 24 23 22 21 20 19 18 17 16 15 14
-19.8 (-21.5) 0 -21.3 (-23.4) 0 (-25.9) -25.8 (-19.5) -20.7 -21.3 -23.5 -23.6 -18.3 (10.5) -16.3 (-21.3) -20.8 4.8
27 Seg13 -23.8
28 Seg14 -16.7
29 Seg15 -19.1
30 Seg16 -7.4
31 Grid11 -26.3
32 Grid10 -26.2
33 VDD 4.8
34 VEE -28.8
35 Grid9 -26.2
36 Grid8 -26.2
37 Grid7 -26.2
38 Grid6 -26.2
39 Grid5 -26.2
Grid4 Grid3 Grid3 Grid2 Grid1 VDD NC NC NC HYPER BASS OPERATE VSS OSC
40 41 42 43 44 45 46 47 48 49 50 51 52
-26.2 -24.1 -24.1 -26.2 -26.2 4.8 4.8 0 2.5
KEY4 13 -0.1
KEY3 12 0.5 (0.1)
KEY2 11 -0.1
KEY1 10 -0.1
STB 9 4.5
CLK 8 4.8
IC 7
D IN 6 3.4
D OUT 5 3.4
SW4 4 0
SW3 3 0
SW2 2 0
SW2 1 -0.1
R2 33K
R3 33K
R4 33K
R5 33K
R6 4.7K
R7 4.7K
C5 33P
R8 1K
RA1 4-33K
C8 0.1
C9 33P
C10 47/6.3
C11 0.01
R9 150
R10 10K
C7 0.01
R15 10K
R14 150
R12 10K
R11 33K
D8 HYPER BASS
D8 SLH-34DC3F
R13 330
S51 TV SOUND
AUTO
NICAM
IC2
GP1U801X
V. OUT 1 4.8
VCC 2 4.8
GND 3 0
C12 220/10
L1 100μH
D9 11ES2
D1 RD4.7ES-T1B2
D1
C1 100/6.3
C2 10/50
C3 0.047
C4 0.047
R1 10K
CN1
1 AL 5V 4.8
2 S.CLK 4.8
3 STB (0) 4.5
4 S.DATA 3.3
5 GND 0
6 RCU OUT 4.8
7 DC(-) -24.0
8 DC(+) -19.0
9 -28V -28.8
TO MAIN (SYSCON) CN802 (Page 4-15)
CN2
D11 1SS132
R17 330
36 SW/JACK
CN101
1 FRONT V INPUT
2 GND(V)
TO MAIN (VIDEO) CN202 (Page 4-20)
JA101
VIDEO
AUDIO (L)
AUDIO (R)
D101 1SS133
D102 1SS133
CN102
1 FRONT A INPUT(L)
2 FRONT A INPUT(R)
3 GND(A)
TO TERMINAL CN2 (Page 4-36)
S13 START TIME+
S14 START TIME-
S15 STOP TIME+
S16 STOP TIME-
S10 CANCEL
S11 TIMER
S12 OPERATE
D17 SLH-34VC3F
D17 OPERATE
C110 0.022
JA102
R.PAUSE IN
CN3
9 FRONT CTL 0
8 seg 4 2.3 (1.4)
7 seg 3 2.9 (3.3)
6 KEY 4 0
5 KEY 3 1.1 (0)
4 KEY 2 0
3 KEY 1 0
2 OPE LED(A) 0 (1.9)
1 OPERATE 0
CN103
1 R.PAUSE 0
2 GND 0
3 BACK UP 5V 4.9
TO MAIN (SYSCON) CN602 (Page 4-16)
1
2
3
4
5
A
B
C
D
E
F
G
H

4.23 DISPLAY/SW & SW/JACK CIRCUIT BOARDS

– DISPLAY/SW –

MAIN COMPONENT PARTS
LOCATION GUIDE<DISPLAY/SW PWB>

REF. No.	LOCATION
IC	
IC1	13B
IC2	20B

REF. No.	LOCATION
DIODE	
D1	4N
D2	5D
D3	5E
D4	17E
D5	3B
D6	5A
D7	4B
D8	9B
D9	3D
D11	17B
D21	2D
D25	2D

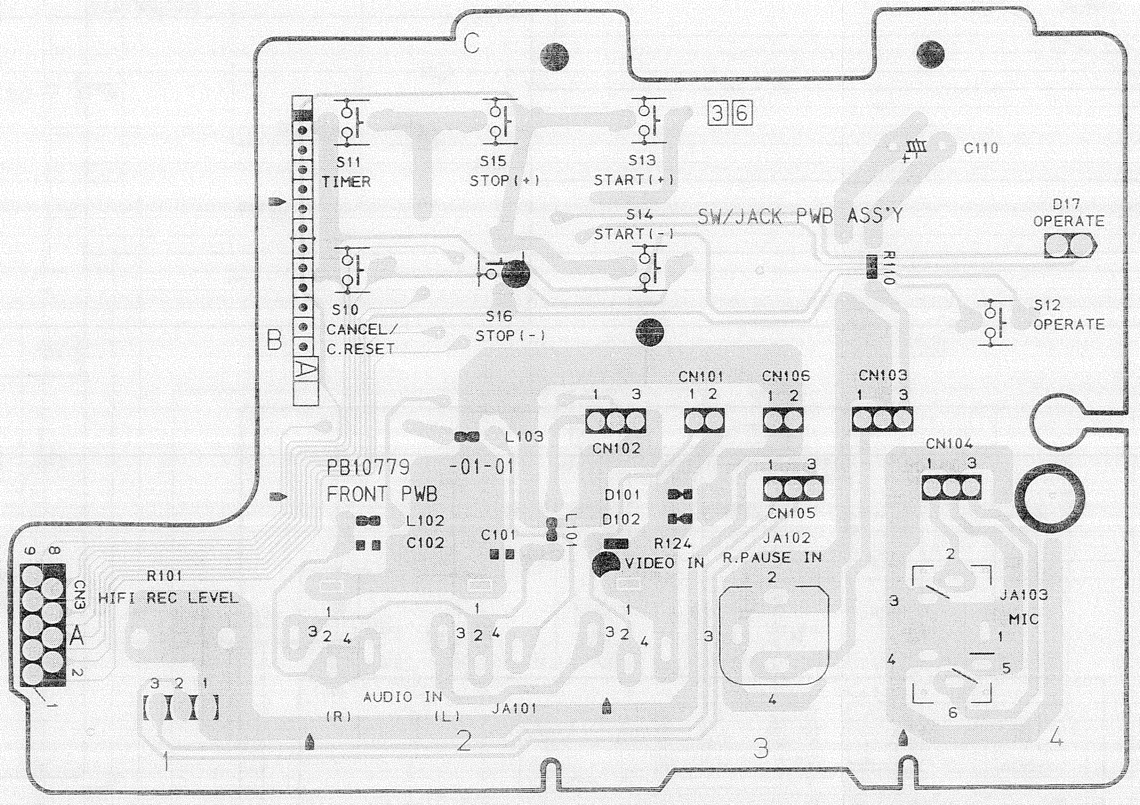
REF. No.	LOCATION
CONNECTOR	
CN1	2E
CN2	20B

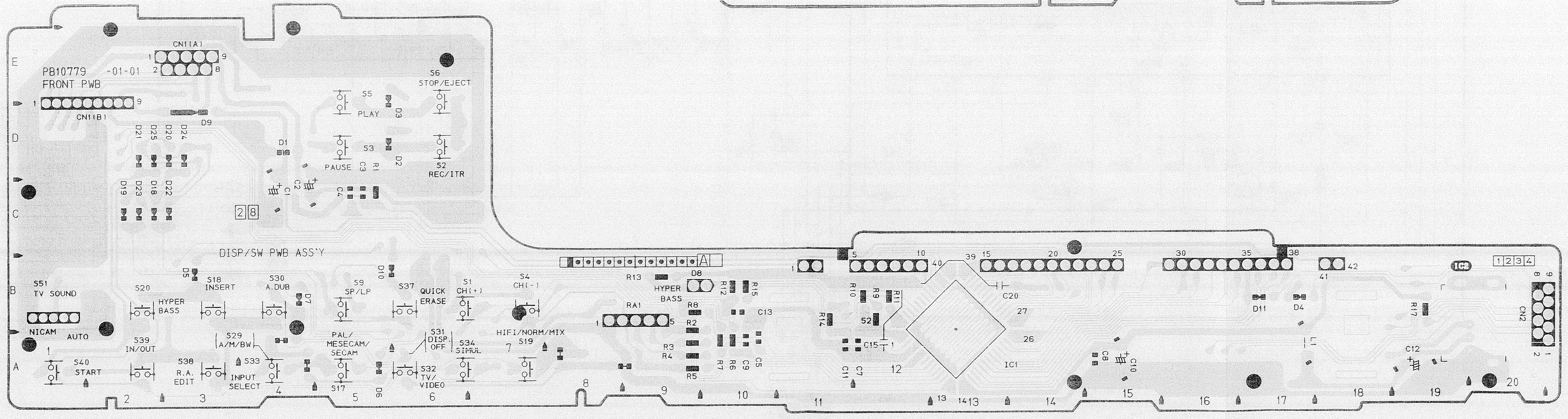
– SW/JACK –

MAIN COMPONENT PARTS
LOCATION GUIDE<SW/JACK PWB>

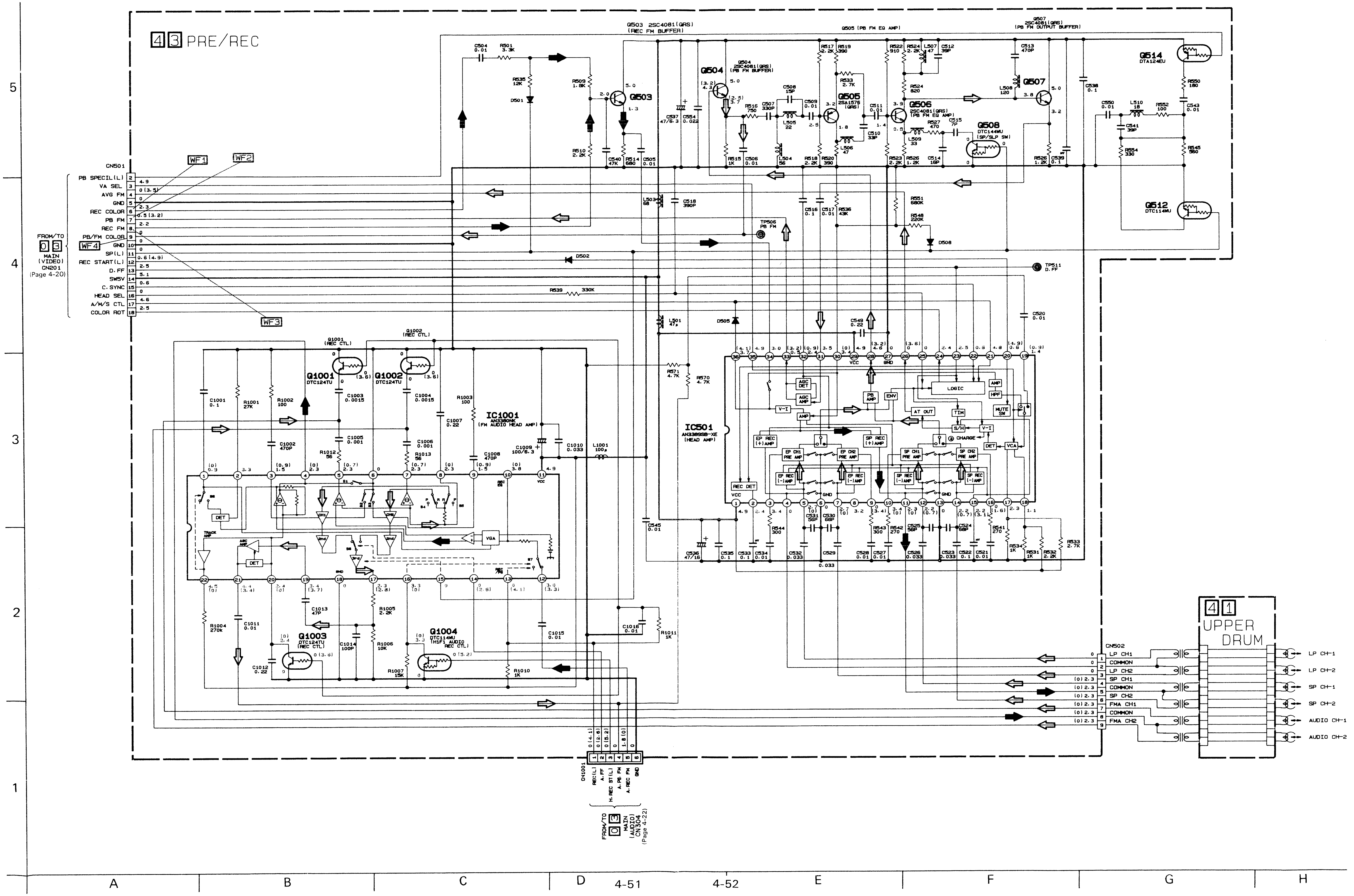
REF. No.	LOCATION
DIODE	
D17	4B
D101	3B
D102	3A

REF. No.	LOCATION
CONNECTOR	
CN3	1A
CN101	3B
CN102	3B
CN103	3B


C
B
A
36
S11
TIMER
S15
STOP(+)
S13
START(+)
S14
START(-)
SW/JACK PWB ASS'Y
C110
D17
OPERATE
R110
S10
CANCEL/
C.RESET
S16
STOP(-)
S12
OPERATE
CN101
CN106
CN103
CN102
CN104
CN105
L103
PB10779 -01-01
FRONT PWB
L102
C102
C101
L101
D101
D102
R124
VIDEO IN
JA102
R.PAUSE IN
JA103
MIC
CN3
R101
HIFI REC LEVEL
AUDIO IN
(R)
(L)
JA101
1
2
3
4

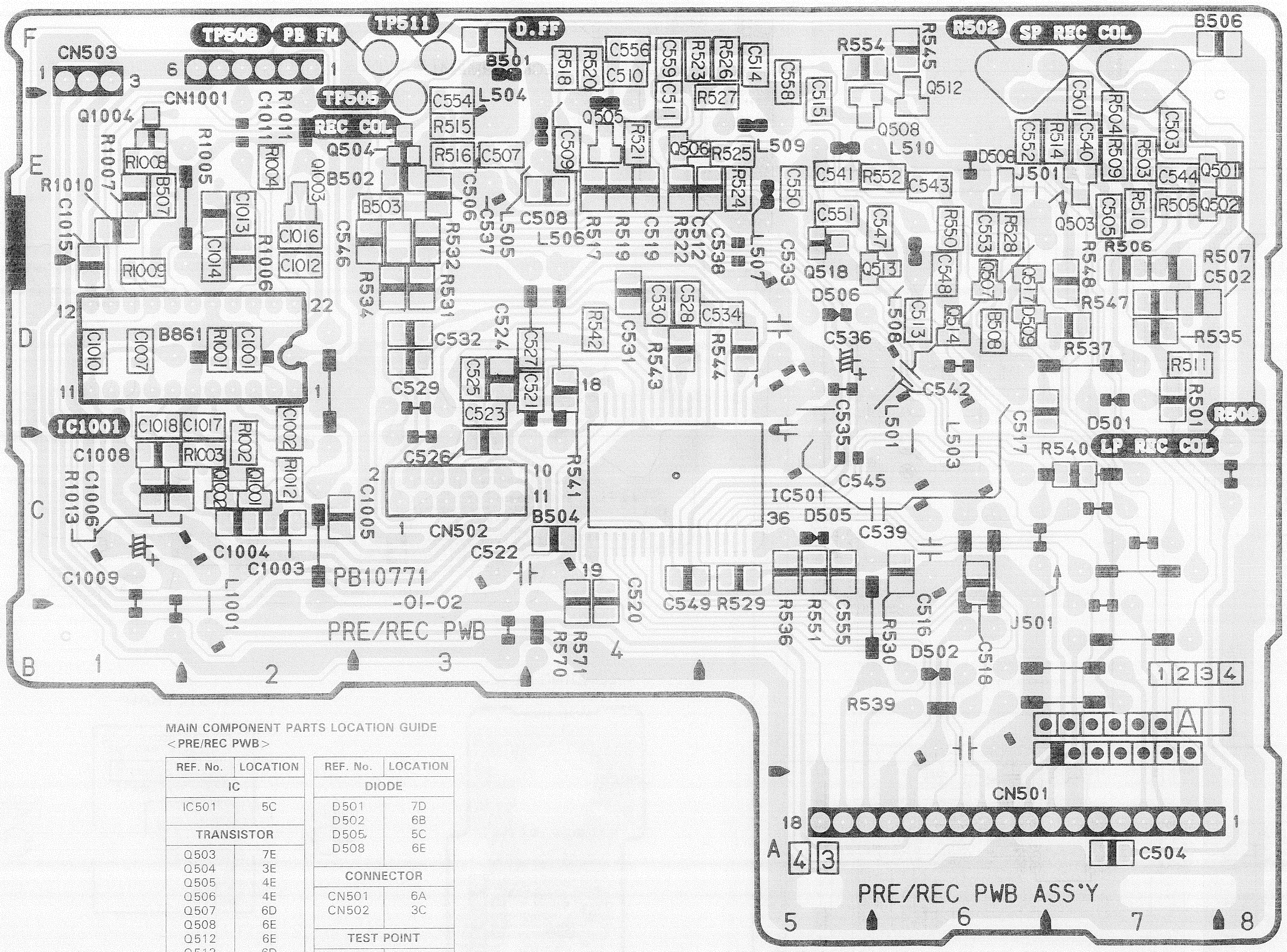

E
D
C
B
A
CN1(A)
PB10779 -01-01
FRONT PWB
CN1(B)
D9
D21
D25
D20
D24
D19
D23
D18
D22
D1
C1
C2
C3
C4
R1
28
S5
PLAY
D3
S3
PAUSE
D2
S6
STOP/EJECT
S2
REC/ITR
DISP/SW PWB ASS'Y
S51
TV SOUND
NICAM
AUTO
S40
START
S20
HYPER
BASS
S39
IN/OUT
D5
S18
INSERT
S38
R.A.
EDIT
S30
A.DUB
D7
S29
A/M/BW
S33
INPUT
SELECT
S9
SP/LP
PAL/
MESECAM/
SECAM
S17
D6
D10
S37
QUICK
ERASE
S31
DISP.
OFF
S32
TV/
VIDEO
S1
CH(+)
S34
SIMUL
S4
CH(-)
HIFI/NORM/MIX
S19
R13
D8
HYPER
BASS
RA1
R8
R2
R3
R4
R5
R7
R6
R12
R15
C13
C9
C5
R10
R9
R11
R14
52
C15
C11
C7
C20
IC1
C8
C10
D11
D4
R17
C12
IC2
1234
CN2
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

4.24 PRE/REC SCHEMATIC DIAGRAM



4 3 PRE/REC
CN501
PB SPECIL(L)
VA SEL
AVG FM
GND
REC COLOR
PB FM
REC FM
PB/FM COLOR
GND
SP(L)
REC START(L)
D.FF
SW5V
C.SYNC
HEAD SEL
A/M/S CTL
COLOR ROT
FROM/TO
0 3
MAIN (VIDEO)
CN201
(Page 4-20)
WF1
WF2
WF3
WF4
Q503 2SC4081(QRS) (REC FM BUFFER)
Q504 2SC4081(QRS) (PB FM BUFFER)
Q505 2SA1576(QRS) (PB FM EQ AMP)
Q506 2SC4081(QRS) (PB FM EQ AMP)
Q507 2SC4081(QRS) (PB FM OUTPUT BUFFER)
Q508 DTC144WU (SP/SLP SW)
Q514 DTA124EU
Q512 DTC114WU
TP506 PB FM
TP511 D.FF
D501
D502
D505
D508
Q1001 (REC CTL) DTC124TU
Q1002 (REC CTL) DTC124TU
Q1003 DTC124TU (REC CTL)
Q1004 DTC114WU (HIFI AUDIO REC CTL)
IC1001 AN3380NK (FM AUDIO HEAD AMP)
IC501 AN3389SB-XE (HEAD AMP)
VGA
DET
TRACK AMP
AGC AMP
AGC DET
LOGIC
AMP
HPF
MUTE SW
V-I
PB AMP
ENV
AT OUT
TIM
S/H
CHARGE
VCA
REC DET
EP REC (+)AMP
SP REC (+)AMP
EP CH1 PRE AMP
EP CH2 PRE AMP
SP CH1 PRE AMP
SP CH2 PRE AMP
EP REC (-)AMP
SP REC (-)AMP
VCC
GND
CN502
LP CH1
COMMON
LP CH2
SP CH1
COMMON
SP CH2
FMA CH1
COMMON
FMA CH2
4 1 UPPER DRUM
LP CH-1
LP CH-2
SP CH-1
SP CH-2
AUDIO CH-1
AUDIO CH-2
CN1001
REC(L)
A.FF
H.REC ST(L)
A.PB FM
A.REC FM
GND
FROM/TO
0 3
MAIN (AUDIO)
CN304
(Page 4-22)
A
B
C
D
E
F
G
H
1
2
3
4
5

4.25 PRE/REC CIRCUIT BOARD


F
E
D
C
B
A
1
2
3
4
5
6
7
8
CN503
TP506
PB FM
TP511
D.FF
B501
TP505
REC COL
CN1001
Q1004
R1007
R1008
R1010
C1015
B507
R1009
R1005
C1011
R1011
R1004
Q1003
C1013
C1014
R1006
C1016
C1012
B502
B503
Q504
C546
R534
R532
R531
C554
L504
R515
R516
C507
C506
C537
L505
C508
L506
R518
R520
C556
C510
Q505
C509
R521
R517
R519
C519
C559
C511
R523
R526
C514
R527
Q506
R525
R524
R522
C512
C538
L509
C558
C515
L507
C550
C533
R554
R545
Q512
Q508
L510
C541
R552
C543
C551
C547
Q518
Q513
D506
R550
C548
C513
L508
R502
SP REC COL
C501
C552
R514
C540
R504
R509
R503
C503
D508
J501
Q503
C553
R528
Q507
Q517
D509
Q514
B508
R548
C505
R510
R505
C544
Q501
Q502
R506
R507
C502
R547
R535
R537
R511
R501
B506
IC1001
B861
C1010
C1007
R1001
C1001
C1008
C1006
R1013
C1018
C1017
R1003
R1002
C1002
R1012
Q1002
Q1001
C1004
C1003
C1009
L1001
C1005
C529
C532
C524
C525
C527
C521
C523
C526
CN502
R541
B504
C522
R542
C531
R543
C530
C528
C534
R544
C536
C535
C542
L501
L503
C517
IC501
C545
D505
C539
C549
R529
R536
R551
C555
R530
C516
D502
C518
R539
C520
R571
R570
D501
R540
R508
LP REC COL
PB10771
-01-02
PRE/REC PWB
CN501
C504
PRE/REC PWB ASS'Y
1 2 3 4
A
4 3

MAIN COMPONENT PARTS LOCATION GUIDE
<PRE/REC PWB>

REF. No.	LOCATION
IC	
IC501	5C
TRANSISTOR	
Q503	7E
Q504	3E
Q505	4E
Q506	4E
Q507	6D
Q508	6E
Q512	6E
Q513	6D
Q514	6D

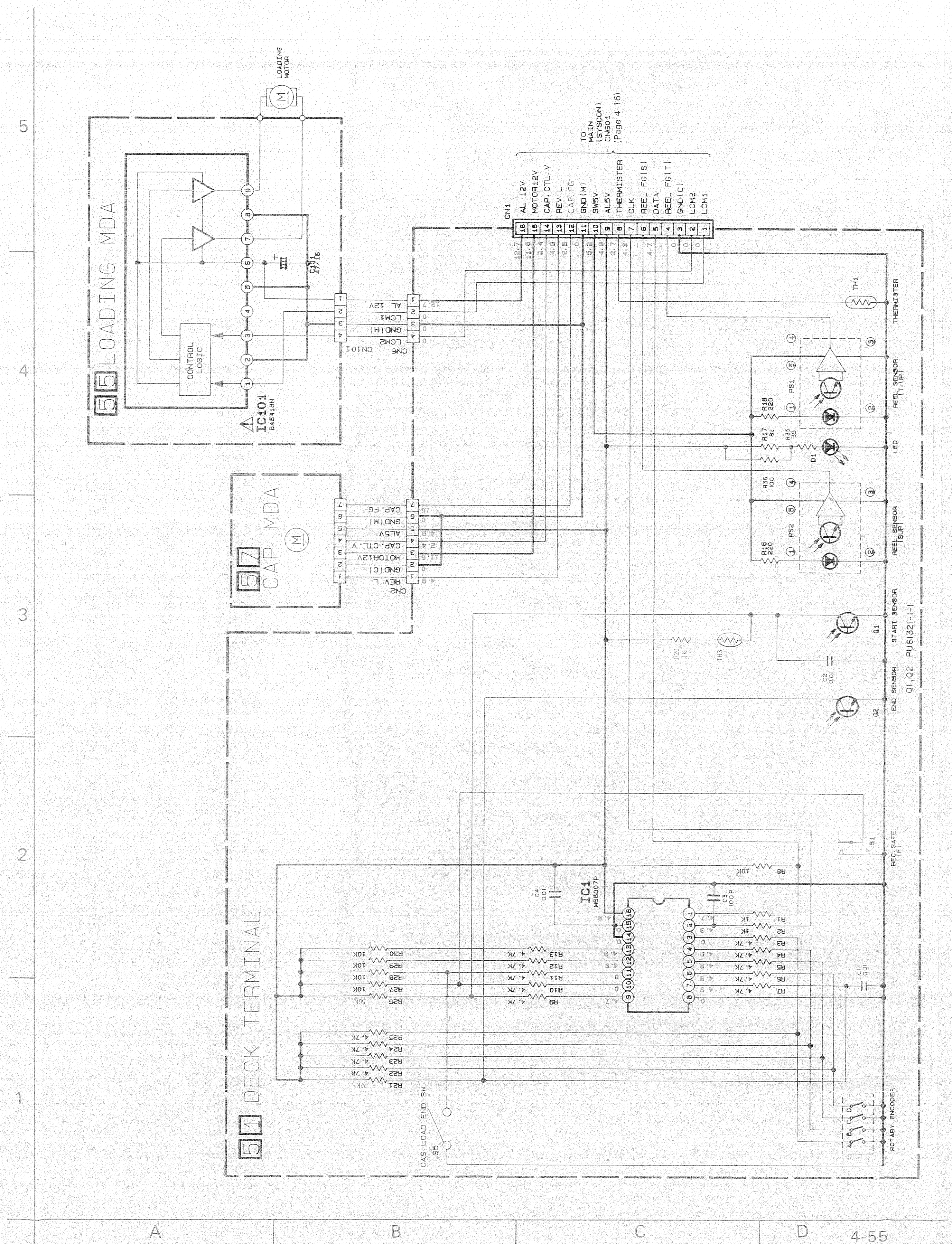
REF. No.	LOCATION
DIODE	
D501	7D
D502	6B
D505	5C
D508	6E
CONNECTOR	
CN501	6A
CN502	3C
TEST POINT	
TP506	2F
TP511	3F

LEADLESS COMPONENT PARTS LOCATION GUIDE
<PRE/REC PWB>

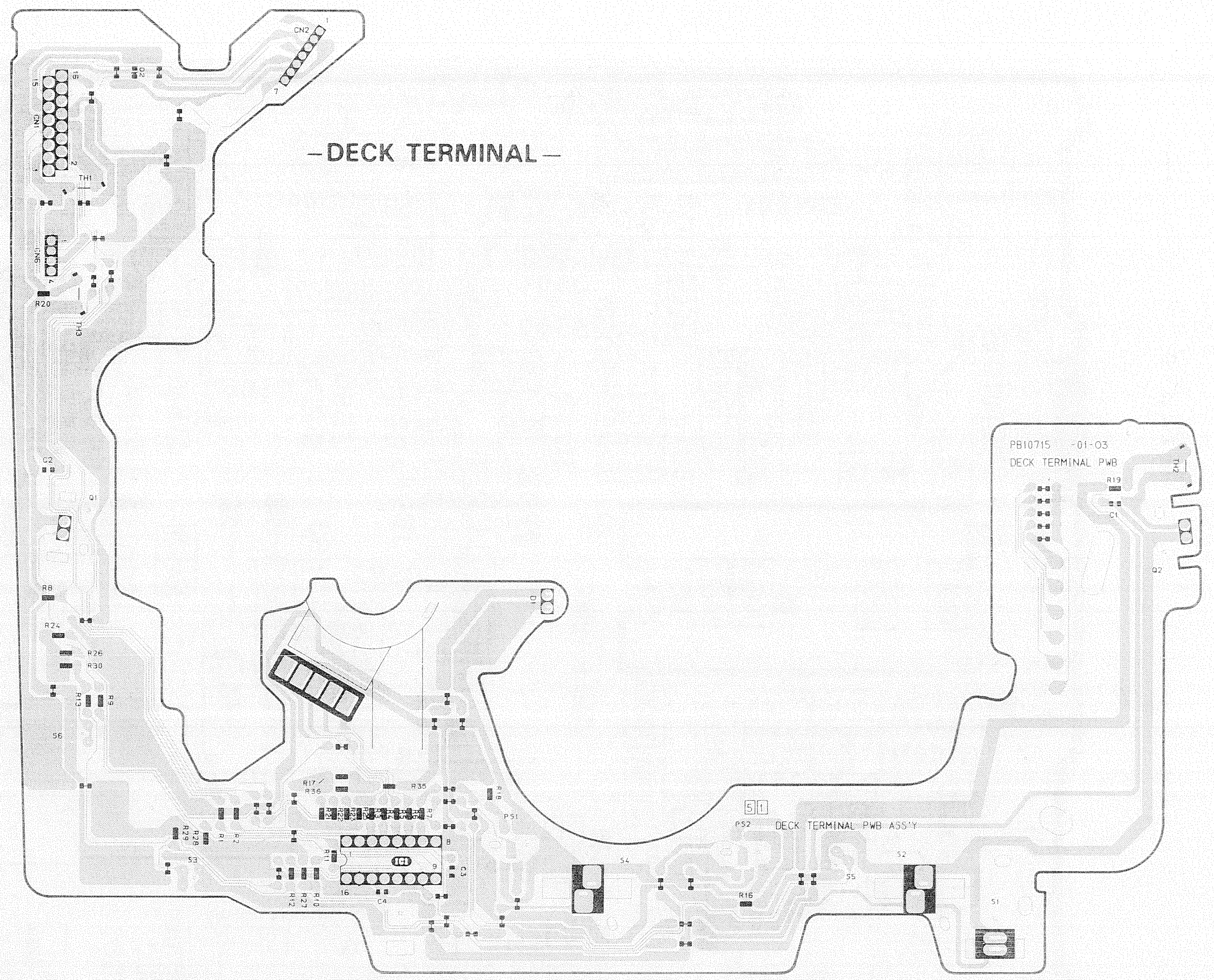
REF. No.	LOCATION
TRANSISTOR	
Q501	7E
Q502	7E
Q503	7E
Q504	3E
Q505	4E
Q506	4E
Q507	6D
Q508	6E
Q512	6E
Q513	6D
Q514	6D
Q517	6D
Q518	5E
Q1001	2C
Q1002	2C
Q1003	2E
Q1004	1E
DIODE	
D508	6E
D509	6D
RESISTOR	
R501	7D
R503	7E
R504	7E
R505	7E
R506	7E
R507	7E
R509	7E
R510	7E
R511	7D
R514	7E
R515	3E
R516	3E
R517	4E
R518	4F
R519	4E
R520	4F
R521	4E
R522	4E
R523	5F
R524	5E
R525	5E
R526	5F
R527	5E
R528	6E
R529	5C
R530	6C
R531	3D
R532	3E
R533	3E
R534	3D
R535	7D
R536	5C
R537	7D
R540	7C
R541	4D
R542	4D
R543	4D
R544	5D
R545	6F
R547	7D
R548	7D
R550	6E
R551	6C
R552	6E
R554	6F
R571	4B
R1001	2D
R1002	2C
R1003	2C
R1004	2E
R1005	2E
R1006	2D
R1007	1E
R1008	1E
R1009	1D
R1010	1E
R1012	2C
R1013	1C

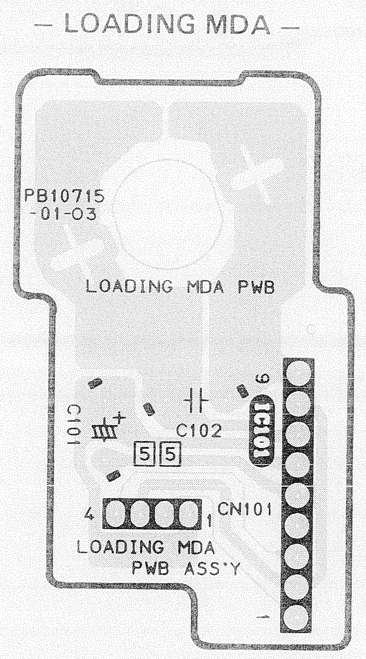
REF. No.	LOCATION
CAPACITOR	
C501	7E
C502	7D
C503	7E
C504	7A
C505	7E
C506	3E
C507	3E
C508	4E
C509	4E
C510	4F
C511	4E
C512	5E
C513	6D
C514	5F
C515	5E
C517	6D
C518	6C
C519	4E
C520	4C
C521	4D
C523	3D
C524	3D
C525	3D
C526	3C
C527	4D
C528	4D
C529	4D
C530	4D
C531	4D
C532	3D
C534	5D
C540	7E
C541	5E
C543	6E
C544	7E
C546	3F
C547	6E
C548	6D
C549	4C
C550	5E
C551	5E
C552	6E
C553	6E
C554	3E
C555	5C
C556	4F
C558	5F
C559	4F
C1001	2D
C1002	2C
C1003	2C
C1004	2C
C1005	2C
C1006	1C
C1007	1D
C1008	1C
C1010	1D
C1012	2D
C1013	2E
C1014	2E
C1015	1E
C1016	2E
C1017	2D
C1018	1B

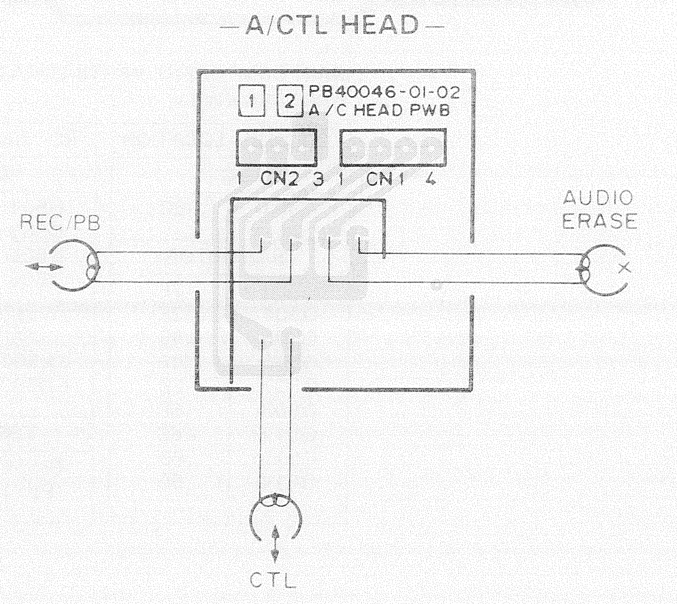
4.26 DECK TERMINAL AND LOADING MDA SCHEMATIC DIAGRAMS


LOADING MOTOR
M
55 LOADING MDA
CONTROL LOGIC
IC101 BA6418N
C101 47/16
CN101
CN5
AL 12V
LCM1
GND(H)
LCM2
TO MAIN (SYSCON) CN501 (Page 4-16)
CN1
AL 12V
MOTOR12V
CAP.CTL.V
REV L
CAP FG
GND(M)
SW5V
AL5V
THERMISTER
CLK
REEL FG(S)
DATA
REEL FG(T)
GND(C)
LCM2
LCM1
57 CAP MDA
M
CN2
CAP.FG
GND(M)
AL5V
CAP.CTL.V
MOTOR12V
GND(C)
REV L
TH1
THERMISTER
PS1
R18 220
REEL SENSOR (T.UP)
R17 82
R35 39
D1
LED
R36 100
PS2
R16 220
REEL SENSOR (SUP)
Q1
START SENSOR
R20 1K
TH3
C2 0.01
Q2
END SENSOR
Q1,Q2 PU6132I-1-1
S1
REC SAFE (T)
R8 10K
C4 0.01
IC1 MB8007P
C3 100P
R1 R2 R3 R4 R5 R6 R7
R9 R10 R11 R12 R13
R26 R27 R28 R29 R30
R21 R22 R23 R24 R25
C1 0.01
CAS. LOAD END SW
S5
ROTARY ENCODER
54 DECK TERMINAL
5
4
3
2
1
A
B
C
D

4.27 DECK TERMINAL, LOADING MDA AND A/CTL HEAD CIRCUIT BOARDS


-DECK TERMINAL-
CN2
CN1
TH1
CN3
R20
PB10715 -01-03
DECK TERMINAL PWB
Q1
Q2
C1
R19
R8
R24
R26
R30
R13
S6
R17
R36
R35
PS1
PS2
51
DECK TERMINAL PWB ASS'Y
S3
S4
S5
S2
S1
R16
C4
D1

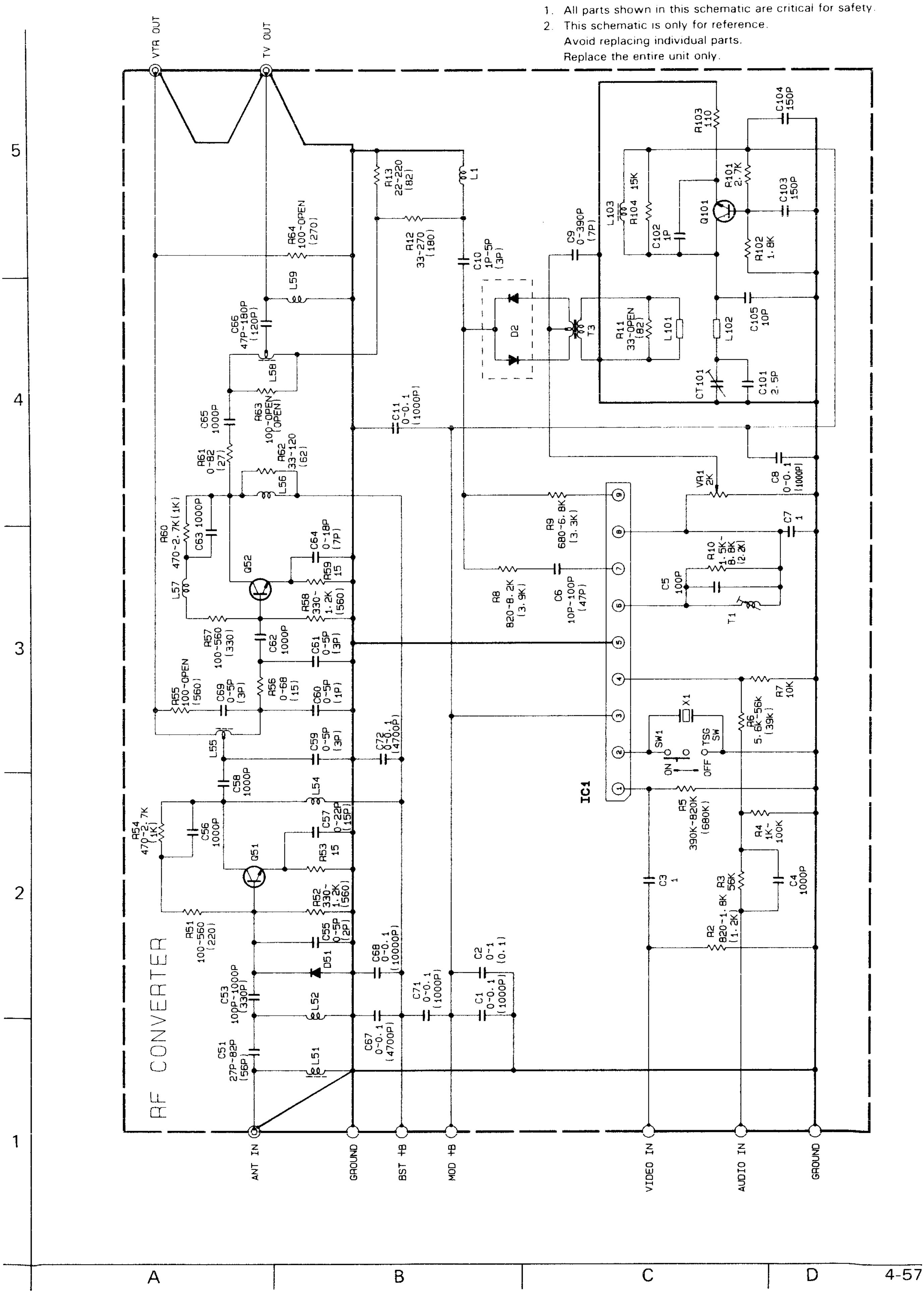

- LOADING MDA -
PB10715 -01-03
LOADING MDA PWB
C101
C102
55
IC101
6
1
4
CN101
LOADING MDA PWB ASS'Y


-A/CTL HEAD-
1 2
PB40046-01-02
A/C HEAD PWB
1 CN2 3
1 CN1 4
REC/PB
AUDIO ERASE
CTL

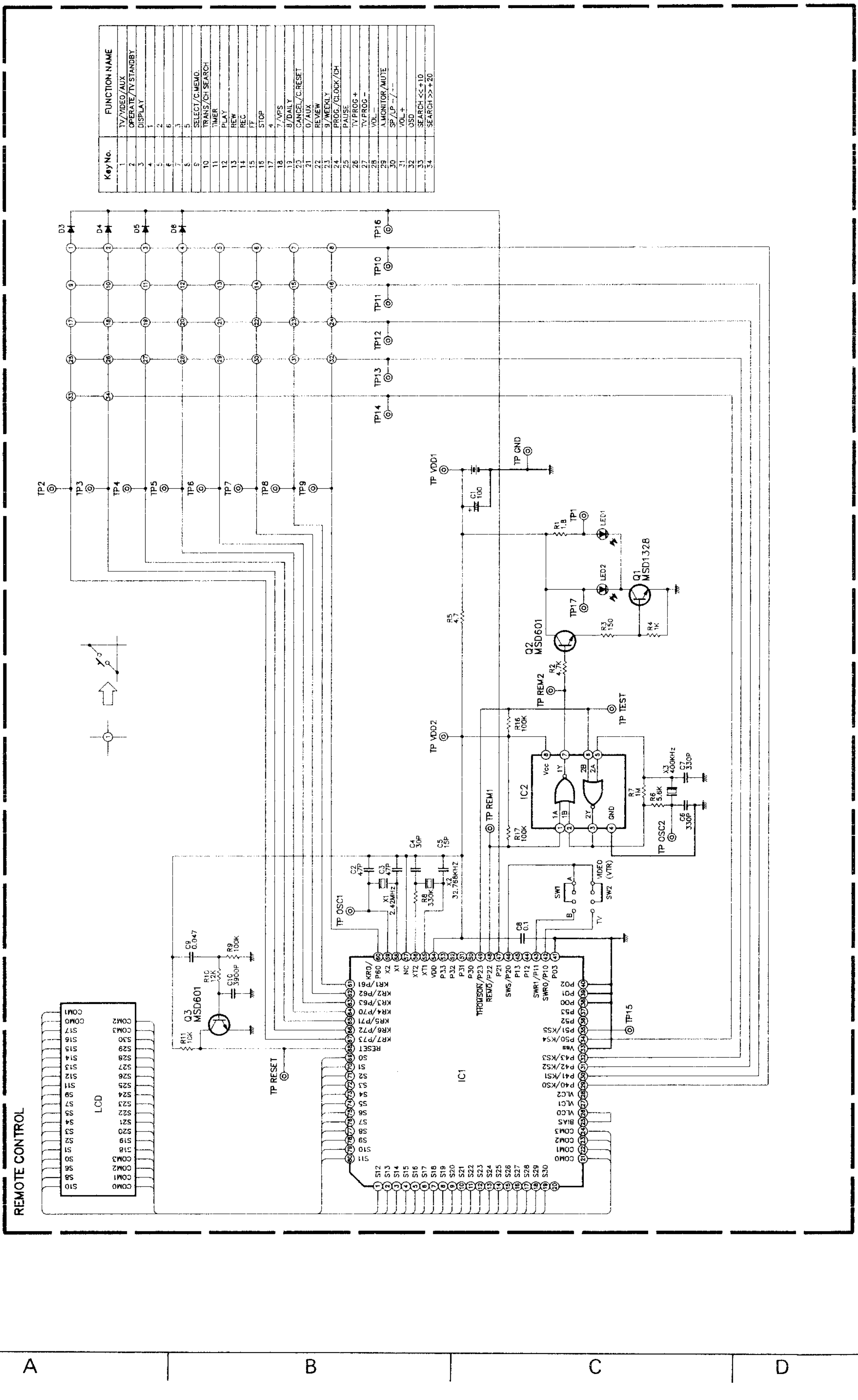
4.28 RF CONVERTER SCHEMATIC DIAGRAM

Note:

1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
   Avoid replacing individual parts.
   Replace the entire unit only.


VTR OUT
TV OUT
RF CONVERTER
ANT IN
GROUND
BST +B
MOD +B
VIDEO IN
AUDIO IN
GROUND
IC1
R13 22-220 (82)
L1
R12 33-270 (180)
C10 1P-5P (3P)
R64 100-OPEN (270)
L59
C66 47P-180P (120P)
L58
R63 100-OPEN (OPEN)
C65 1000P
R61 0-82 (27)
R62 33-120 (62)
L56
C11 0-0.1 (1000P)
D2
C9 0-390P (7P)
T3
R11 33-OPEN (82)
L101
L103
R104 15K
C102 1P
Q101
R103 110
C104 150P
R101 2.7K
C103 150P
R102 1.8K
C105 10P
L102
CT101
C101 2.5P
C8 0-0.1 (1000P)
VR1 2K
R9 680-6.8K (3.3K)
C7 1
R10 1.5K-8.8K (2.2K)
C5 100P
T1
R8 820-8.2K (3.9K)
C6 10P-100P (47P)
R60 470-2.7K (1K)
C63 1000P
L57
Q52
C64 0-18P (7P)
R59 15
R58 330-1.2K (560)
R57 100-560 (330)
C62 1000P
C61 0-5P (3P)
R55 100-OPEN (560)
C69 0-5P (3P)
R56 0-68 (15)
C60 0-5P (1P)
L55
C59 0-5P (3P)
C72 0-0.1 (4700P)
C58 1000P
L54
R54 470-2.7K (1K)
C56 1000P
C57 0-22P (15P)
Q51
R53 15
R52 330-1.2K (560)
R51 100-560 (220)
C55 0-5P (2P)
D51
C68 0-0.1 (10000P)
C53 100P-1000P (330P)
L52
C71 0-0.1 (1000P)
C2 0-1 (0.1)
C1 0-0.1 (1000P)
C51 27P-82P (56P)
L51
C67 0-0.1 (4700P)
X1
SW1
ON
OFF
TSG SW
R7 10K
R6 5.6K-56K (39K)
R5 390K-820K (680K)
R4 1K-100K
C3 1
R3 56K
C4 1000P
R2 820-1.8K (1.2K)
1
2
3
4
5
A
B
C
D

4.29 REMOTE CONTROL SCHEMATIC DIAGRAM

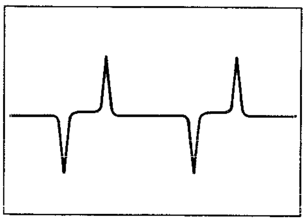

REMOTE CONTROL
IC1
IC2
LCD
Q1 MSD1328
Q2 MSD601
Q3 MSD601
X1 2.42MHz
X2 32.768KHZ
X3 400KHz
SW1
SW2 (VTR)
TP RESET
TP OSC1
TP OSC2
TP VDD1
TP VDD2
TP GND
TP REM1
TP REM2
TP TEST
TP15
TP16
LED1
LED2
D3
D4
D5
D8

Key No.	FUNCTION NAME
1	TV/VIDEO/AUX
2	OPERATE/TV STANDBY
3	DISPLAY
4	1
5	2
6	6
7	3
8	5
9	SELECT/C.MEMO.
10	TRANS/CH SEARCH
11	TIMER
12	PLAY
13	REW
14	REC
15	FF
16	STOP
17	4
18	7/VPS
19	8/DAILY
20	CANCEL/C.RESET
21	0/AUX
22	REVIEW
23	9/WEEKLY
24	PROG./CLOCK/CH
25	PAUSE
26	TV PROG +
27	TV PROG −
28	VOL −
29	A.MONITOR/MUTE
30	SP/LP -/--
31	VOL +
32	OSD
33	SEARCH << +10
34	SEARCH >> +20

4.30 WAVEFORMS

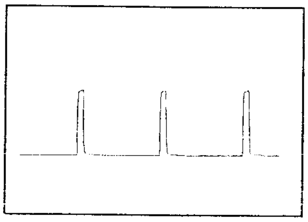
– SERVO –

WF1 TP401



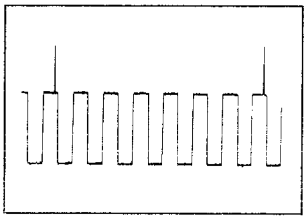
PB 1.2 Vp-p

WF2



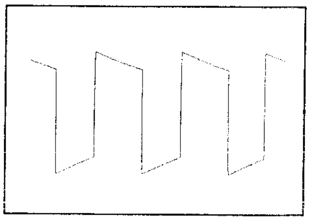
REC/PB 4.3 Vp-p

WF3



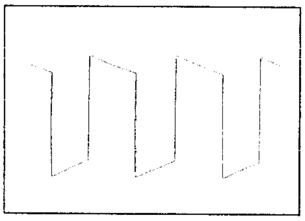
REC 5.0 Vp-p

WF4



PB 6.0 Vp-p

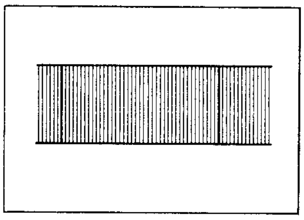
WF5



REC/PB 6.0 Vp-p

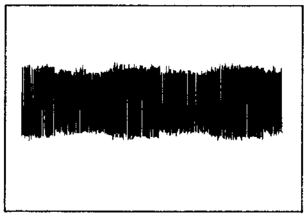
– VIDEO –

WF1 REC FM



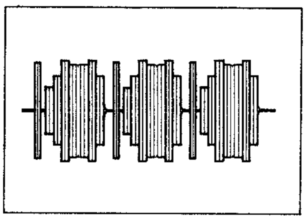
REC 0.68 Vp-p

WF2 PB FM



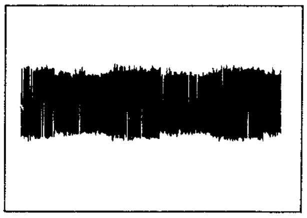
PB 0.35 Vp-p

WF3 REC COLOR



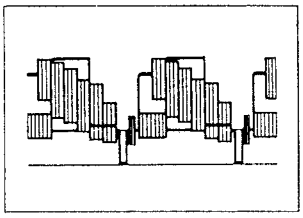
REC 0.24 Vp-p

WF4 PB COLOR



PB 0.35 Vp-p

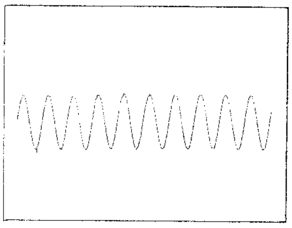
WF5 TP210 VIDEO OUT



REC/PB 1.0 Vp-p

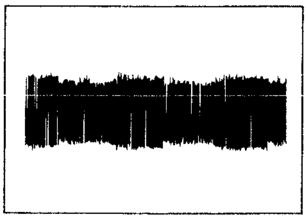
– AUDIO –

WF1 TP333



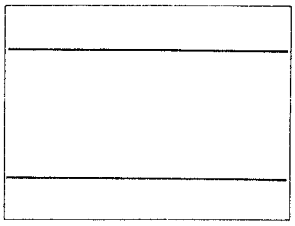
REC/PB 42.0 Vp-p

WF2 TP353 PB FM



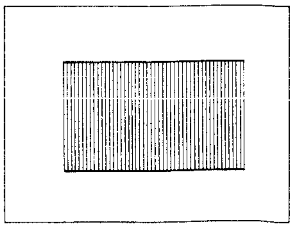
PB 0.15

WF3



REC/PB 2.5 VDC

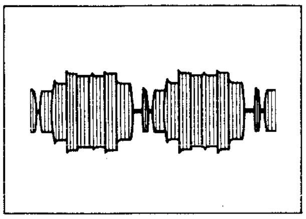
WF5 REC FM



REC 0.2 Vp-p

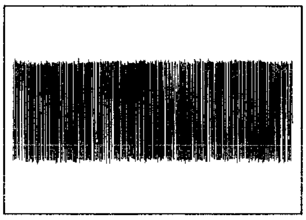
—PRE/REC—

WF1 REC COLOR



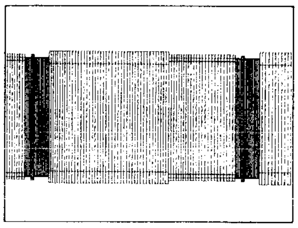
REC 0.25 Vp-p

WF2 PB FM



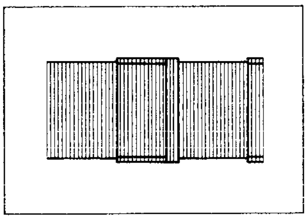
PB 0.4 Vp-p

WF3 REC FM



REC 0.6 Vp-p

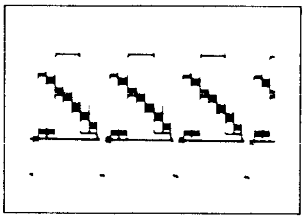
WF4



PB 0.4 Vp-p

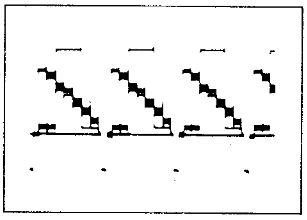
—VIDEO UNIT—

WF1



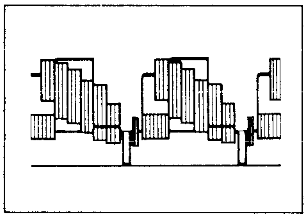
REC 0.5 Vp-p

WF2



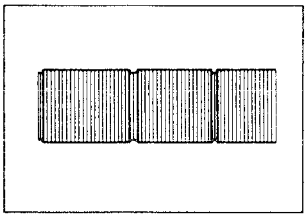
PB 0.13 Vp-p

WF3



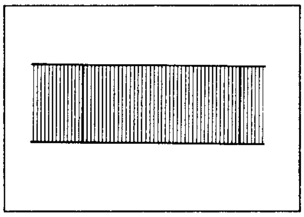
REC 1.4 Vp-p

WF3



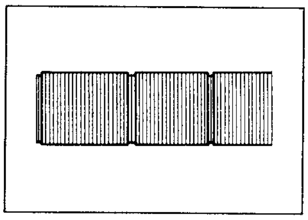
PB 0.9 Vp-p

WF4 REC FM



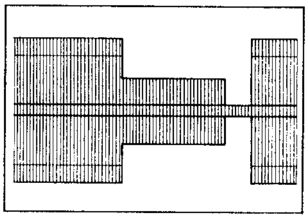
REC 2.0 Vp-p

WF5 PB FM



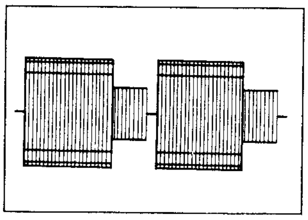
PB 0.5 Vp-p

WF6 REC COLOR



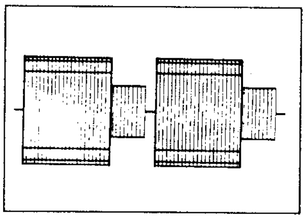
REC 0.4 Vp-p

WF7



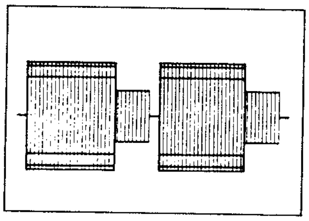
REC 1.3 Vp-p

WF8



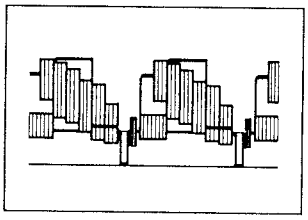
REC 0.9 Vp-p

WF9 PB COLOR



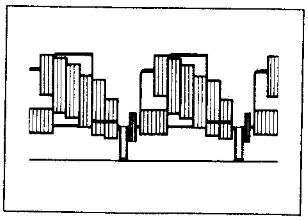
PB 0.1 Vp-p

WF10 VIDEO IN



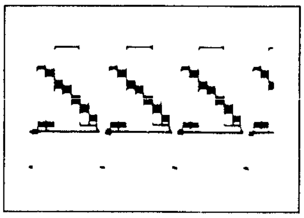
REC 1.1 Vp-p

WF11 VIDEO OUT



REC 2.3 Vp-p
PB 2.6 Vp-p

WF12



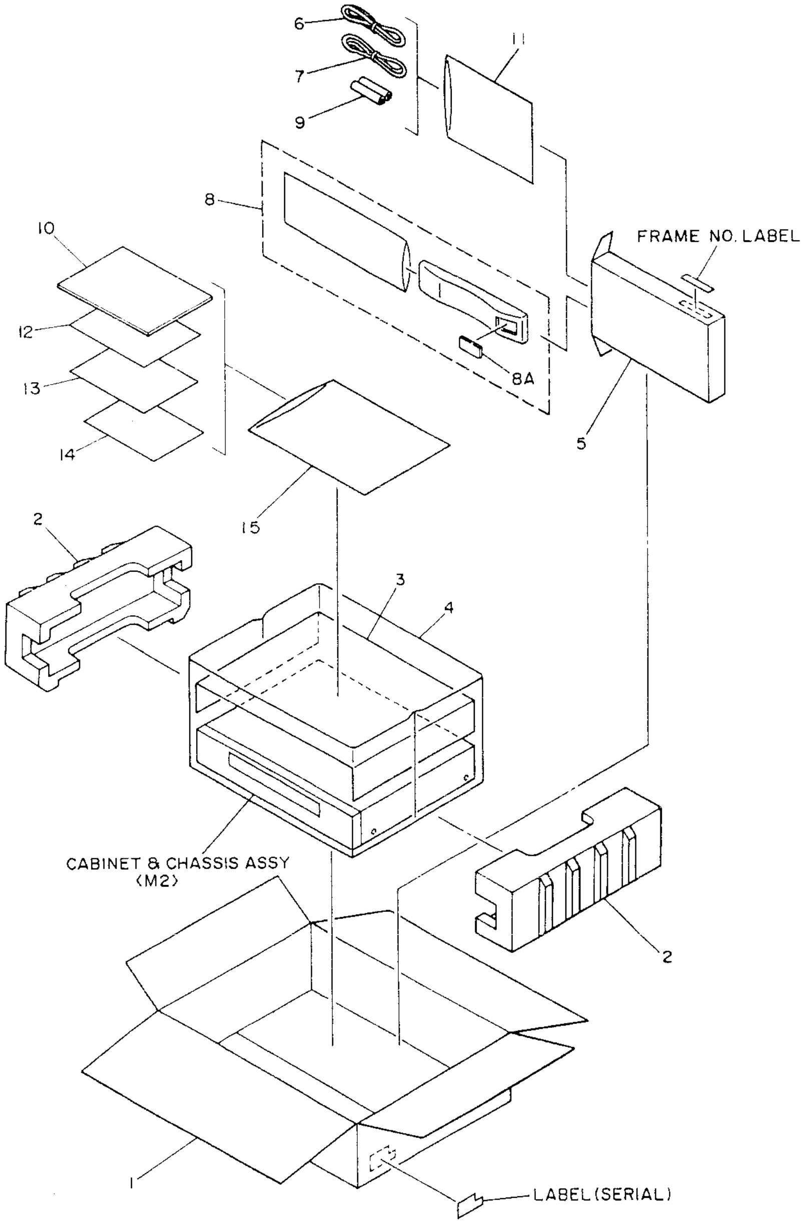
REC/PB 0.4 Vp-p

SECTION 5
PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

5.1 PACKING AND ACCESSORY ASSEMBLY <M1>


6
7
9
11
8
10
FRAME NO. LABEL
12
13
8A
14
5
2
15
3
4
CABINET & CHASSIS ASSY
<M2>
2
1
LABEL (SERIAL)

****

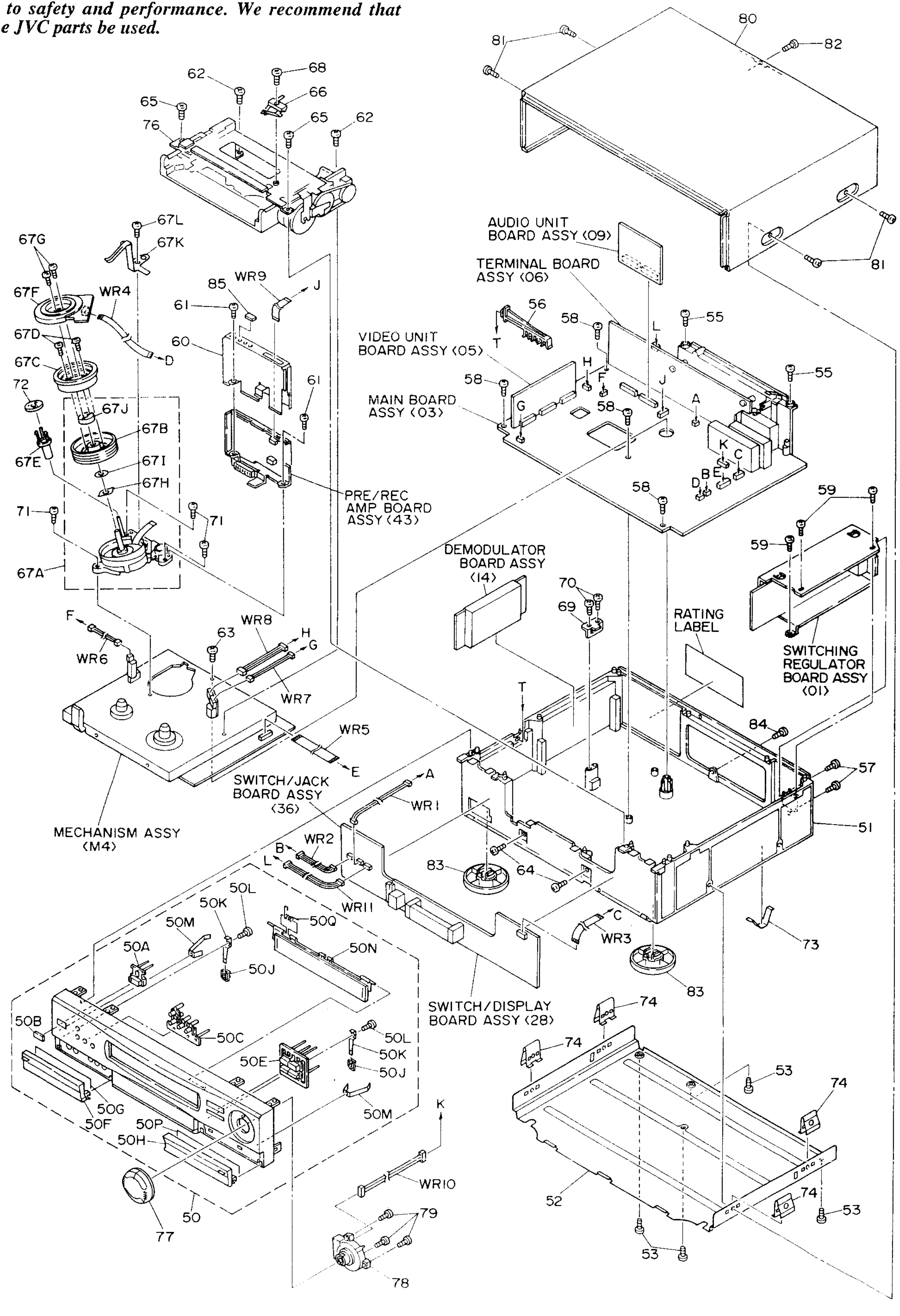
PACKING AND ACCESSORY ASSEMBLY <M1>

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	1	PQ34868-5	PACKING CASE
	2	PQ34775A	CUSHION ASSEMBLY
	3	PQ41026-8	PROTECT SHEET
	4	PUP30320-26-12	POLY BAG
	5	PQ34715-5	CASE(ACCESSORY)
	6	PU59167-3	RF CABLE
⚠	7	QMP51H0-183	POWER CORD
	8	PQ11534F	REMOTE CONTROLLER
	8A	PQ46063	CAP(BATTERY)
	9	UM-3DJ2P	BATTERY,X2
⚠	10	PU30425-1424	INSTRUCTIONS
	11	PQM30023-8	POLY BAG
	12	BT-20066A	E.DISTRI.LIST
	13	BT-20060	GUARANTY CARD
	14	PU22642-5	SHEET(V.PLUS)
	15	PQM30023-5	POLY BAG

5.2 CABINET AND CHASSIS ASSEMBLY <M2>

BEWARE OF BOGUS PARTS

Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.

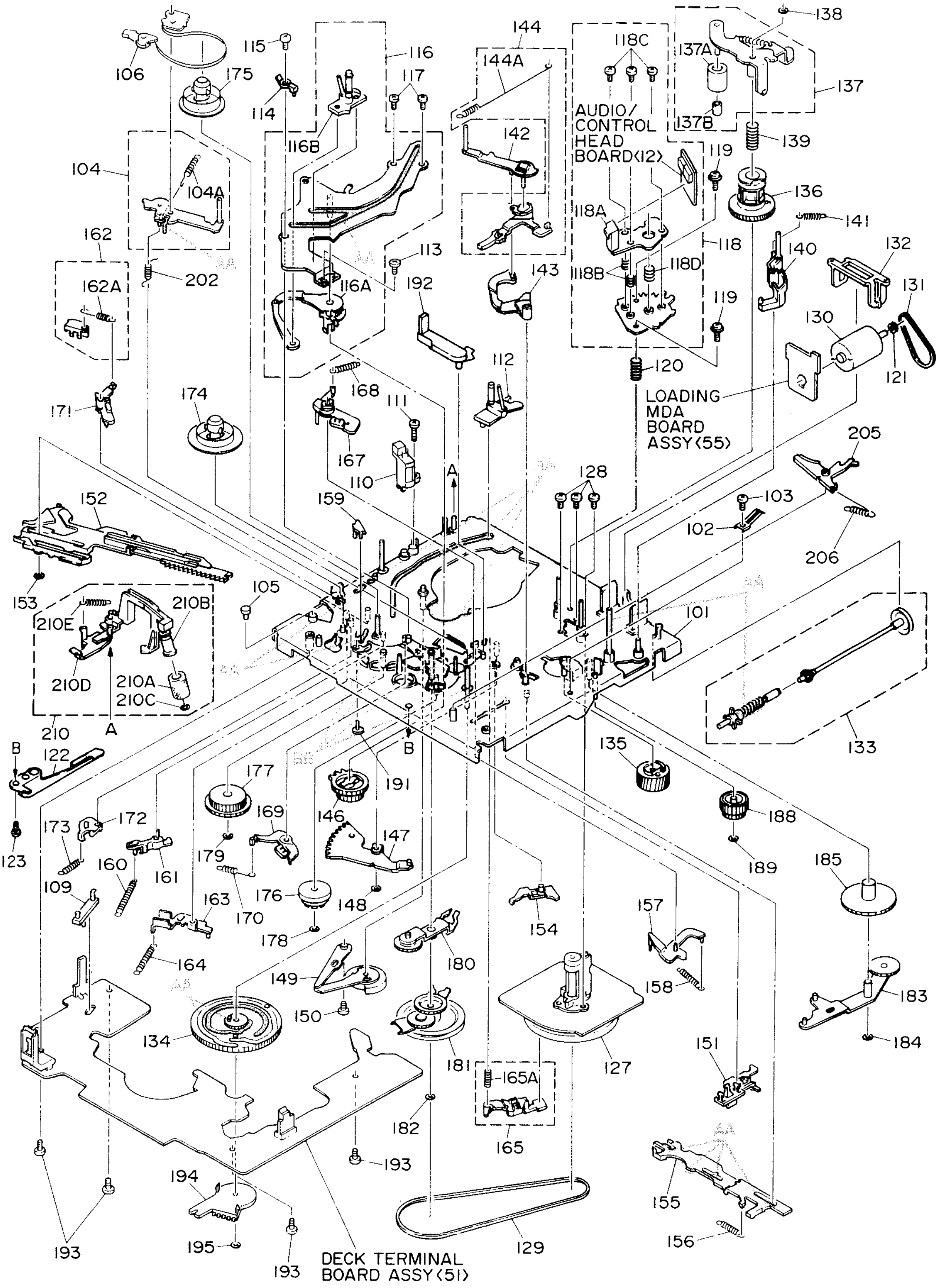

80
81
82
62
68
66
65
76
65
62
AUDIO UNIT BOARD ASSY (09)
TERMINAL BOARD ASSY (06)
67L
67G
67K
67F
WR4
85
WR9
J
61
56
58
L
55
T
VIDEO UNIT BOARD ASSY (05)
67D
D
60
H
F
55
67C
58
J
72
61
MAIN BOARD ASSY (03)
A
67J
G
58
67B
K
67E
67I
C
B
E
67H
D
58
59
PRE/REC AMP BOARD ASSY (43)
71
71
59
DEMODULATOR BOARD ASSY (14)
67A
70
69
RATING LABEL
F
WR8
H
63
G
WR6
SWITCHING REGULATOR BOARD ASSY (01)
T
WR7
84
WR5
57
E
SWITCH/JACK BOARD ASSY (36)
A
WR1
51
MECHANISM ASSY (M4)
WR2
B
L
83
64
50L
50K
WR11
50M
50Q
C
WR3
50A
50N
73
50J
83
50B
50C
SWITCH/DISPLAY BOARD ASSY (28)
74
50L
74
50E
50K
50J
53
74
50G
50M
K
50F
50P
50H
WR10
74
52
53
77
50
79
53
78

****

CABINET AND CHASSIS ASSEMBLY <M2>

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	50	PQ11531J	FRONT PANEL ASSY
	50A	PQ34725-4	BUTTON(POWER)
	50B	PQ46050	INDICATOR
	50C	PQ21549-6	BUTTON(1)
	50E	PQ21559-4	BUTTON(OPE)
	50F	PQ21547-7	DOOR(L)
	50G	PQ34734-5	PLATE(DOOR L)
	50H	PQ21548-7	DOOR(R)
	50J	PQ46167	SPRING(2),X2
	50K	PQ46166-1-2	SPRING(1),X2
	50L	SDSF2005Z	SCREW,X2
	50M	PQ34736	EARTH PLATE,X2
	50N	PQ21560-8	CASSETTE DOOR
	50P	PQ34735-6	PLATE(DOOR R)
	50Q	PQ45704	TORSION SPRING
⚠	51	PQ11548	BOTTOM CHASSIS
⚠	52	PQ11556-1-2	BOTTOM COVER
	53	SDSF3010Z	SCREW,X4 BOTTOM COVER
	55	SDSF3008Z	SCREW,X2 TERMINAL BOARD
	56	PQ34776	PWB HOLDER,VIDEO UNIT
	57	SDSF3010M	SCREW,X2 INLET
	58	SDSF3008Z	SCREW,X4 MAIN
	59	SDSF3008Z	SCREW,X3 SW REG
	60	PQ21578	SHIELD CASE(PRE
	61	SDSG2606Z	SCREW,X2 PRE
	62	SDST2610Z	SCREW,X2 CASSETTE HOUSING
	63	PQ43831	SPECIAL SCREW,MECHA
	64	SDST4014Z	SCREW,X2 MECHA
	65	SDSF3008Z	SCREW,X2 CASSETTE HOUSING
	66	PQ46083	EARTH PLATE,CASSETTE HOUSING
	67A	PDM2247B	DRUM SUB ASS′Y
	67B	PDM3353Q	UPPER DRUM ASSY
	67C	PDZ0136	ROTOR ASSY
	67D	SPSH2660Z	SCREW,X2
	67E	PDM4300A-3	I.D.ROLLER ASSY
⚠	67F	PDZ0119-5	STATOR ASSY
	67G	SPSP2606Z	SCREW,X2
	67H	PDM4314A-2	BRUSH ASSEMBLY
	67I	PDM4050-9	WASHER
	67J	PDM4332A	COLLAR ASSEMBLY
	67K	PDM3372	EARTH PLATE
	67L	SPSG2606Z	SCREW
	68	SPST2604Z	SCREW,CASSETTE HOUSING
	69	PQ46100	BRACKET,MECHA
	70	SDSF3008Z	SCREW,X2 BRACKET
	71	SPST2612Z	SCREW,X3 DRUM
	72	PQ45339-2-3	INERTIA PLATE
	73	PQ34737	EARTH PLATE,REC
	74	PQ46135	EARTH PLATE,X4 TOP BOTTOM
	76	PUS29662A-3	CASSETTE HOUSING ASSY
	77	PQ34862B-2	KNOB(SHUTTLE)ASSY
	78	PEME0913	SHUTTLE ASSY
	79	SDSF2610Z	SCREW,X3 SHUTTLE
⚠	80	PQ11550-4	TOP COVER
	81	PQ43827	SPECIAL SCREW,X4 TOP COVER
	82	SDSF3010M	SCREW,TOP COVER
	83	PQ46094A	FOOT ASSEMBLY,X2
	84	SDSF3010M	SCREW,TERMINAL BOARD
	85	PQM30029-27	SPACER,PRE/REC
	WR1	PW30504-02W5401	WIRE,CN202-M
	WR2	PW30218-0337415	WIRE,CN602-M
	WR3	PW30802-0932	FFC WIRE,CN802-M
	WR4	PW30803-0446	FFC WIRE,CN402-M
	WR5	PW30802-1626	FFC WIRE,CN601-M
	WR6	PW30504-02W1601	WIRE,CN303-M
	WR7	PW30504-03W5001	WIRE,CN401-M
	WR8	PW30504-04W3207	WIRE,CN302-M
	WR9	PW30504-06W1407	WIRE,CN304-M
	WR10	PW30218-0443813	WIRE,CN603-M
	WR11	PW30504-03W5001	WIRE,CN102-SW

5.3 MECHANISM ASSEMBLY <M4>


106
175
115
114
116
116B
117
144
144A
142
143
118C
AUDIO/ CONTROL HEAD BOARD<12>
118A
118
118B
118D
119
120
138
137A
137
137B
139
136
141
140
132
131
130
121
LOADING MDA BOARD ASSY<55>
104
104A
162
162A
202
116A
113
192
168
167
111
110
112
174
171
128
103
102
205
206
152
153
159
105
101
210E
210B
210D
210A
210C
210
A
B
122
123
133
135
177
191
146
188
189
172
173
169
147
179
160
161
109
163
170
176
148
178
185
154
157
158
164
149
150
180
183
184
134
181
182
165A
165
127
151
155
156
193
194
195
129
AA
BB
DECK TERMINAL BOARD ASSY<51>

Category	Part number	MARK
Grease	KANTO-G-31KAV	AA
Oil	COSMO-HV56	BB

NOTE: The section marked in AA and BB indicate lubrication and greasing areas.

****

MECHANISM ASSEMBLY <M4>

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	101	PQ11473B-4	MAIN DECK ASSY
	102	PQ43849	EARTH PLATE
	103	SPST2604Z	SCREW
	104	PQ45887A-2	TENSION ARM ASSY
	104A	PQ45373-1-3	TENSION SPRING
	105	PQ45374-1-2	ADJUST PIN
	106	PQ34629A	TENSION BAND ASSY
	109	PQ34631	SPRING BASE
	110	PEHE0287	FULL ERASE HEAD
	111	SDSF2614Z	SCREW,FE HEAD
	112	PQ34749A-2	POLE BASE ASSY(SUPPLY)
	113	SDST2608Z	SCREW
	114	PQ45444	STOPPER
	115	SPSF2006Z	SCREW
	116	PQ34619A-1	LOADING ASSY(TAKE UP)
	116A	PQ45286D-3	SPRING STAY ASSY
	116B	PQ34756A	POLE BASE ASSY(TAKE UP)
	117	SDSF2608Z	SCREW,X2
	118	PQ45355C	AUDIO CONTROL HEAD ARM ASSY
	118A	PEHE0262	AUDIO CONTROL HEAD
	118B	PQM30002-192	COMPRESSION SPRING,X2
	118C	PQ43687A	SPECIAL SCREW,X3
	118D	PQM30002-211	COMPRESSION SPRING
	119	SPSF2608M	SCREW,X2
	120	PQM30002-216	COMPRESSION SPRING
	121	PQ43546-1-2	MOTOR PULLEY
	122	PQ46099	CAPSTAN BRACKET
	123	SDST2606Z	SCREW
⚠	127	PU61313	CAPSTAN MOTOR
	128	SPSG2608Z	SCREW,X3
	129	PQM30003-27	BELT(CAPSTAN MOTOR)
⚠	130	PU60628-2	LOADING MOTOR
	131	PQM30003-28-14	BELT(MODE MOTOR)
	132	PQ34025	MOTOR HOLDER
	133	PQ45917A-1	WORM CLUTCH ASSY
	134	PQ11468-1-3	CONTROL CAM
	135	PQ34630	RELAY CAM
	136	PQ21481	PINCH ROLLER CAM
	137	PQ45921A-6	PINCH ROLLER ARM ASSY
	137A	PQ42007C-2	PINCH ROLLER ASSY
	137B	PQ43566	PINCH ROLLER CAP
	138	PQM30017-12	SLIT WASHER
	139	PQM30002-223	COMPRESSION SPRING
	140	PQ34564	PINCH ROLLER LEVER
	141	PQM30001-371-92	TENSION SPRING
	142	PQ45924A-3	GUIDE ARM ASSY
	143	PQ34566-1-2	ARM LEVER
	144	PQ45925A-1	SUB BRAKE ASSY(TAKE UP)
	144A	PQ45926-1-2	TENSION SPRING
	146	PQ34033	LOADING GEAR(TAKE UP)
	147	PQ46217A	ARM GEAR
	148	PQM30017-30	SLIT WASHER
	149	PQ45298C	LOADING GEAR ASSY(SUPPLY)
	150	PQ45913	SPECIAL SCREW
	151	PQ45399A-3	SLIDING BASE ASSY
	152	PQ11469-1-5	CONTROL PLATE
	153	PQM30017-45	SLIT WASHER
	154	PQ45402	RESET LEVER
	155	PQ21482-1-4	SLIDE PLATE
	156	PQM30001-377	TENSION SPRING
	157	PQ34569-1-3	IDLER CANCEL LEVER
	158	PQM30001-381	TENSION SPRING
	159	PQ34570-1-2	TAKE UP HEAD
	160	PQ46024	TENSION SPRING
	161	PQ34571-1-2	T-UP LEVER
	162	PQ45929A-3	SLIDER ASSY
	162A	PQ46003-1-5	TENSION SPRING
	163	PQ34572	REVERSE TENSION LEVER
	164	PQM30001-343-78	TENSION SPRING
	165	PQ45930A-3	CAPSTAN BRAKE ASSY
	165A	PQM30001-378	TENSION SPRING
	167	PQ45932B-3	MAIN BRAKE ASSY(TAKE UP)
	168	PQM30001-331-72	TENSION SPRING
	169	PQ45933A	MAIN BRAKE ASSY(SUPPLY)
	170	PQM30001-374	TENSION SPRING
	171	PQ34574	SUB BRAKE(SUPPLY)
	172	PQ45934-1-1	OFF LEVER
	173	PQM30001-347-74	TENSION SPRING
	174	PQ45935B-3	REEL DISK ASSY(TAKE UP)
	175	PQ45524A-4	REEL DISK ASSY(SUPPLY)
	176	PU61388-1-3	CLUTCH GEAR UNIT(TAKE UP)
	177	PU61389	CLUTCH GEAR UNIT(SUPPLY)
	178	PQM30017-7	SLIT WASHER
	179	PQM30017-7	SLIT WASHER
	180	PU61390	IDLER UNIT (D)
	181	PU61317-1-3	CENTER GEAR UNIT
	182	PQM30017-30	SLIT WASHER
	183	PQ45943A-1	DRIVE ARM ASSY
	184	PQM30017-47	SLIT WASHER
	185	PQ45945	RELAY GEAR
	188	PQ45434	CASSETTE HOUSING GEAR
	189	PQM30017-47	SLIT WASHER
	191	PQ45981	C.SWITCH PIN
	192	PQ21488	LED GUIDE
	193	SDSF2608Z	SCREW,X4
	194	PU61322-1-2	ROTARY ENCODER
	195	PQM30017-40	SLIT WASHER
	202	PQ45768-1-3	TORSION SPRING (TENSION ARM)
	205	PQ45927A-1	SUB BRAKE ASSY(TAKE UP 2)
	206	PQM30001-357	TENSION SPRING
	210	PQ45561A-2	CLEANER ASSEMBLY
	210A	PQ44837-2	CLEANER
	210B	PQ45689	ROLLER
	210C	PQM30017-38	SLIT WASHER
	210D	PQ34047-1-2	LIMITTER LEVER
	210E	PQM30001-323	TENSION SPRING

5.4 ELECTRICAL PARTS LIST

* *

SWITCHING REGULATOR BOARD ASSY <01>

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA1	PB20633B-02	SWITCH REGULATOR BOARD ASSY	
	Q1	2SC4304-LF619	TRANSISTOR	
	Q2	2SC3616(MLK)	TRANSISTOR	
	Q31	2SC1740S(RS)	TRANSISTOR	
	D1	10E6-F2	DIODE	
	D2	10E6-F2	DIODE	
	D3	10E6-F2	DIODE	
	D4	10E6-F2	DIODE	
	D5	AU01	FR DIODE	
	D6	AU01	FR DIODE	
	D7	1SS133	DIODE	
	D8	RD27ES-T1B2	DIODE	
	D9	1SS133	DIODE	
	D31	AU01Z	FR DIODE	
	D32	AU01Z	FR DIODE	
	D33	AU01Z	FR DIODE	
	D34	FML-12S	FR DIODE	
	D35	RD16ES-T1B2	ZENER DIODE	
	D36	FMB-24	BARRIER DIODE	
	D37	AU01Z	FR DIODE	
	D38	RD5.6ES-T1B2	ZENER DIODE	
	D39	MTZ30AT-77	ZENER DIODE	
	R2	QRD161J-334	RESISTOR	330KΩ,1/6W
	R3	QRD161J-334	RESISTOR	330KΩ,1/6W
	R4	QRG029J-104G	OMF RESISTOR	100KΩ,2W
	R7	QRX014J-R33Z	MF RESISTOR	0.33Ω,1W
	R8	QRG029J-301G	OMF RESISTOR	300Ω,2W
	R9	QRD161J-152	RESISTOR	1.5KΩ,1/6W
	R11	QRD161J-821	RESISTOR	820Ω,1/6W
	R13	QRD161J-683	RESISTOR	68KΩ,1/6W
	R15	QRG029J-104G	OMF RESISTOR	100KΩ,2W
	R31	QRX014J-4R7Z	MF RESISTOR	4.7Ω,1W
	R32	QRG02DJ-222X	OMF RESISTOR	2.2KΩ,2W
⚠	R33	QRZ0077-101X	FUSIBLE RESISTOR	100Ω,1/4W
	R34	QRD161J-391	RESISTOR	390Ω,1/6W
	R35	QRD161J-561	RESISTOR	560Ω,1/6W
	R36	QRD161J-101	RESISTOR	100Ω,1/6W
	R37	QRD161J-222	RESISTOR	2.2KΩ,1/6W
⚠	C2	QFZ9022-683	F CAPACITOR	0.068μF
⚠	C3	QCZ9016-103M	C CAPACUTOR	
⚠	C7	QCZ9026-222	CAPACITOR	0.0022μF
	C10	PECA0793-826	E CAPACITOR	
⚠	C11	QCZ9026-471	CAPACITOR	470pF
	C12	QETC1HM-225	E CAPACITOR	2.2μF,50V
	C13	QCZ0212-472	CAPACITOR	0.0047μF,1KV
	C14	QCZ0136-101Z	CAPACITOR	100pF
	C15	QFV11HJ-104	F CAPACITOR	0.1μF,50V
	C16	QFLA1HJ-822Z	M CAPACITOR	0.0082μF,50V
	C31	QEGB1AM-107	E CAPACITOR	100μF,10V
	C32	QETC1JM-226	E CAPACITOR	22μF,63V
	C33	QFLA1HJ-103Z	M CAPACITOR	0.01μF,50V
	C34	QEGB1EM-227	E CAPACITOR	220μF,25V
	C35	QETC1EM-227	E CAPACITOR	220μF,25V
	C36	QEGB1CM-687	E CAPACITOR	680μF,16V
	C37	QETB1CM-108	E CAPACITOR	1000μF,16V
	C38	QEGB1AM-108	E CAPACITOR	1000μF,10V
	C39	QETB1AM-108	E CAPACITOR	1000μF,10V
	C40	QETC1HM-226	E CAPACITOR	22μF,50V
	C41	QETC1HM-105	E CAPACITOR	1μF,50V
	C42	QFN31HJ-103	M CAPACITOR	0.01μF,50V
	C43	QFN31HJ-103	M CAPACITOR	0.01μF,50V
	L31	PELN0628-330KZ	COIL	33μH
	L32	PELN0628-330KZ	COIL	33μH
	L33	PELN0628-330KZ	COIL	33μH
⚠	PC1	PC120FY9	PH COUPLER	
⚠	T1	PELN0890	SW TRANS	
⚠	AO1	PEMC0973-03	AC INLET	
⚠	BKT1	PQ21566-1-1	TRANS BRACKET	
⚠	FC1	PEMC0965-Z	FUSE CLIP,F1	
⚠	FC2	PEMC0965-Z	FUSE CLIP,F1	
⚠	LF1	PELN0885	LINE FILTER	
⚠	LF2	PU60347	LINE FILTER	
	SCW1	SDST3006Z	SCREW,X3 TRANS BRACKET	
	SCW2	SDSG3008Z	SCREW,HEAT SINK	
	SCW3	SDSG3006Z	SCREW,HEAT SINK	
	SCW4	SDSG3008Z	SCREW,X2 H.SINK(1)	
	SCW5	SDSG3006Z	SCREW,H.SINK(1)	
⚠	SLD1	PQ44610-1-2	HEAT SINK,Q1	
⚠	SLD2	PQ46005	H.SINK(1),D34 D36	
	CN1	PEMC0976-110	B TO B CONNECTOR,(1-10) MAIN	
⚠	F1	QMF51E2-1R6	FUSE	T1.6A

* *

MAIN BOARD ASSEMBLY <03>

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA1	PB10768B-01	MAIN BOARD ASSY	
	TB1	PB10775B	TERMINAL BOARD ASSEMBLY	
	CL1	PU56729-2	WIRE CLAMP	
	ETH1	PQ46115	EARTH PLATE,TERMINAL BOARD	
	ETH2	PQ46116	EARTH PLATE,TERMINAL BOARD	
	JA1	PEMC0824	DIN CONNECTOR,VPT I/O	
	SCW1	SDST2605Z	SCREW,RF CONVERTOR	
	SCW2	SDSF3008Z	SCREW,X7 TERMINAL BOARD	
	SPC1	PU60010	SPACER	

- TUNER SECTION -

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
⚠	RF1	PERF0154	RF CONVERTER	
⚠	TNR1	PERF0138	UHF TUNER	
⚠	TNR2	PERF0129	IF UNIT	
	Q1	DTC114ES	TRANSISTOR	
		or KRC102M	TRANSISTOR	
	Q2	2SB810H,J	TRANSISTOR	
	Q3	2SD1450S,T	TRANSISTOR	
	Q12	2SK381(C)	FE TRANSISTOR	
	Q13	DTC144ES	TRANSISTOR	
		or KRC104M	TRANSISTOR	
	Q14	2SC1740S(S)	TRANSISTOR	
	Q15	2SA933S(S)	TRANSISTOR	
	Q16	2SC1740S(S)	TRANSISTOR	
	D1	MTZ33CT-77	ZENER DIODE	
	D2	1SS133	DIODE	
	D3	1SS133	DIODE	
	D4	1SS133	DIODE	
	R1	QRSA08J-152YN	RESISTOR	1.5KΩ,1/10W

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	R2	QRSA08J-153YN	RESISTOR	15KΩ,1/10W
	R3	QRSA08J-331YN	RESISTOR	330Ω,1/10W
	R30	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
	R31	QRSA08J-683YN	RESISTOR	68KΩ,1/10W
	R32	QRSA08J-393YN	RESISTOR	39KΩ,1/10W
	R33	QRSA08J-821YN	RESISTOR	820Ω,1/10W
	R34	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
	R35	QRSA08J-223YN	RESISTOR	22KΩ,1/10W
	R36	QRSA08J-153YN	RESISTOR	15KΩ,1/10W
	R37	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
	R38	QRSA08J-682YN	RESISTOR	6.8KΩ,1/10W
	R39	QRSA08J-123YN	RESISTOR	12KΩ,1/10W
	C1	QETF1CM-336	E CAPACITOR	33μF,16V
	C6	QETF1CM-106	E CAPACITOR	10μF,16V
	C7	QETC1HM-106	E CAPACITOR	10μF,50V
	C8	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C9	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C10	QCYA1HK-471	CAPACITOR	470pF,50V
	C13	QCYA1HK-222	CAPACITOR	0.0022μF,50V
	C14	QCFA1HZ-223	CAPACITOR	0.022μF,50V
	C15	QETF1HM-474	E CAPACITOR	0.47μF,50V
	L1	PU59152-6R8J	COIL	6.8μH
	T1	PELN0806	COIL	
	WR1	PW30504-03R3804	WIRE,(MAIN-CN1)	
	WR2	PW30401-BB12T	COAXIAL CABLE	
	CN1	PU59555-3	CONNECTOR,(1-3) DEMOD	

– VIDEO SECTION –

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	IC221	LVA523SA	IC	
		or LVA523S	IC	
	Q201	2SA1309(RS)	TRANSISTOR	
		or 2SA1267(G)-TJK	TRANSISTOR	
		or 2SA933S(RS)	TRANSISTOR	
	Q202	2SA1309(RS)	TRANSISTOR	
		or 2SA933S(RS)	TRANSISTOR	
		or 2SA1267(G)-TJK	TRANSISTOR	
	Q203	2SC1740S(RS)	TRANSISTOR	
		or 2SC3199(G)	TRANSISTOR	
		or 2SC3311A(RS)	TRANSISTOR	
		or 2SC536SPA(G)	TRANSISTOR	
	D201	1SS133	DIODE	
	D202	1SS133	DIODE	
	R202	QRD161J-123	RESISTOR	12KΩ,1/6W
	R203	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
	R204	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R206	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R207	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R208	QRD161J-152	RESISTOR	1.5KΩ,1/6W
	R210	QRSA08J-562YN	RESISTOR	5.6KΩ,1/10W
	R211	QRD161J-562	RESISTOR	5.6KΩ,1/6W
	R213	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
	R214	QRSA08J-273YN	RESISTOR	27KΩ,1/10W
	R218	QRD123J-391SX	RESISTOR	390Ω,1/2W
	R221	QRSA08J-750YN	RESISTOR	75Ω,1/10W
	R222	QRSA08J-562YN	RESISTOR	5.6KΩ,1/10W
	R224	QRSA08J-750YN	RESISTOR	75Ω,1/10W
	R233	QRSA08J-750YN	RESISTOR	75Ω,1/10W
	C202	QETF1AM-476	E CAPACITOR	47μF,10V
	C203	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C204	QETF1CM-476	E CAPACITOR	47μF,16V
	C205	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C207	QETF1EM-475	E CAPACITOR	4.7μF,25V
	C221	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C222	QETC0JM-476	E CAPACITOR	47μF,6.3V
	C223	QETC1HM-105	E CAPACITOR	1μF,50V
	C224	QETF1HM-105	E CAPACITOR	1μF,50V
	C225	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C239	QETC0JM-108	E CAPACITOR	1000μF,6.3V
	L201	PU48530-101K	COIL	100μH
	L220	PU48530-101K	COIL	100μH
	CN201	PEMC0975-018	B TO B CONNECTOR(1-18) PRE/RE	
	CN202	PU59555-2	CONNECTOR,(1-2) SW/JACK	

– AUDIO SECTION –

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	IC301	BA6138	IC	
	IC302	XRA15218	IC	
		or BA15218	IC	
	IC303	XRA7795LS	IC	
		or BA7795LS	IC	
	Q302	2SA933S(QR)	TRANSISTOR	
	Q303	2SA933S(QR)	TRANSISTOR	
	Q304	2SC1740S(RS)	TRANSISTOR	
		or 2SC3199(GB)-TJK	TRANSISTOR	
	Q305	2SA933S(QR)	TRANSISTOR	
	Q306	2SC1740S(RS)	TRANSISTOR	
		or 2SC3199(GB)-TJK	TRANSISTOR	
	R301	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R302	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R303	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
	R304	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
	R305	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
	R306	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
	R307	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R308	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R311	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
	R312	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
	R313	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R314	QRSA08J-682YN	RESISTOR	6.8KΩ,1/10W
	R315	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
	R316	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
	R317	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R318	QRSA08J-682YN	RESISTOR	6.8KΩ,1/10W
	R319	QRSA08J-182YN	RESISTOR	1.8KΩ,1/10W
	R320	QRSA08J-682YN	RESISTOR	6.8KΩ,1/10W
	R324	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R328	QRSA08J-393YN	RESISTOR	39KΩ,1/10W
	R329	QRSA08J-123YN	RESISTOR	12KΩ,1/10W
	R330	QRSA08J-562YN	RESISTOR	5.6KΩ,1/10W
	R331	QRSA08J-122YN	RESISTOR	1.2KΩ,1/10W
	R332	QRSA08J-271YN	RESISTOR	270Ω,1/10W
	R333	QRSA08J-153YN	RESISTOR	15KΩ,1/10W
	R334	QRSA08J-821YN	RESISTOR	820Ω,1/10W
	R335	QRSA08J-223YN	RESISTOR	22KΩ,1/10W
	R336	QRSA08J-680YN	RESISTOR	68Ω,1/10W
	R337	QRSA08J-274YN	RESISTOR	270KΩ,1/10W
	R338	QRSA08J-822YN	RESISTOR	8.2KΩ,1/10W
	R339	QRSA08J-682YN	RESISTOR	6.8KΩ,1/10W
	R340	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R341	QRSA08J-332YN	RESISTOR	3.3KΩ,1/10W
	R342	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R343	QRSA08J-153YN	RESISTOR	15KΩ,1/10W
	R344	QRSA08J-153YN	RESISTOR	15KΩ,1/10W

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	R346	QRSA08J-100YN	RESISTOR	10Ω,1/10W
	R347	QRSA08J-393YN	RESISTOR	39KΩ,1/10W
	R348	QRSA08J-682YN	RESISTOR	6.8KΩ,1/10W
	R349	QRSA08J-392YN	RESISTOR	3.9KΩ,1/10W
	R350	QRSA08J-153YN	RESISTOR	15KΩ,1/10W
	R351	QRSA08J-3R3YN	RESISTOR	3.3Ω,1/10W
	R352	QRD161J-151	RESISTOR	150Ω,1/6W
	R353	QRSA08J-473YN	RESISTOR	47KΩ,1/10W
	R354	QRSA08J-183YN	RESISTOR	18KΩ,1/10W
	R355	QRSA08J-473YN	RESISTOR	47KΩ,1/10W
	R356	QRSA08J-273YN	RESISTOR	27KΩ,1/10W
	R357	QRSA08J-473YN	RESISTOR	47KΩ,1/10W
	R358	QRSA08J-183YN	RESISTOR	18KΩ,1/10W
	R359	QRSA08J-271YN	RESISTOR	270Ω,1/10W
	R360	QRSA08J-273YN	RESISTOR	27KΩ,1/10W
	R361	QRSA08J-3R3YN	RESISTOR	3.3Ω,1/10W
	R368	QRSA08J-221YN	RESISTOR	220Ω,1/10W
	R369	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	C301	QETF1EM-475	E CAPACITOR	4.7μF,25V
	C302	QETF1EM-475	E CAPACITOR	4.7μF,25V
	C303	QETF1CM-476	E CAPACITOR	47μF,16V
	C304	QERF1CM-106	E CAPACITOR	10μF,16V
	C305	QERF1CM-106	E CAPACITOR	10μF,16V
	C306	QETF1CM-106	E CAPACITOR	10μF,16V
	C307	QETF1CM-106	E CAPACITOR	10μF,16V
	C308	QETF1HM-225	E CAPACITOR	2.2μF,50V
	C309	QETF1HM-225	E CAPACITOR	2.2μF,50V
	C310	QETF1HM-105	E CAPACITOR	1μF,50V
	C311	QETF1HM-105	E CAPACITOR	1μF,50V
	C312	QERF1CM-106	E CAPACITOR	10μF,16V
	C313	QERF1CM-106	E CAPACITOR	10μF,16V
	C318	QCYA1HK-222	CAPACITOR	0.0022μF,50V
	C319	QETC1CM-476	E CAPACITOR	47μF,16V
	C321	QETC1CM-106	E CAPACITOR	10μF,16V
	C323	QCC11EJ-153	CAPACITOR	0.015μF,25V
	C324	QETC1HM-105	E CAPACITOR	1μF,50V
	C325	QCC11EJ-223	CAPACITOR	0.022μF,25V
	C326	QCYA1HK-681	CAPACITOR	680pF,50V
	C327	QEK61HM-475	E CAPACITOR	4.7μF,50V
	C329	QETF1AM-226	E CAPACITOR	22μF,10V
	C330	QCYA1HK-123	CAPACITOR	0.012μF,50V
	C331	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C332	QETC1HM-104	E CAPACITOR	0.1μF,50V
	C333	QCYA1HK-331	CAPACITOR	330pF,50V
	C334	QFLC1HJ-333Z	M CAPACITOR	0.033μF,50V
	C335	QETF1CM-106	E CAPACITOR	10μF,16V
	C336	QCYA1HK-332	CAPACITOR	0.0033μF,50V
	C337	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C338	QFLC1HJ-333Z	M CAPACITOR	0.033μF,50V
	C339	QEK61CM-106	E CAPACITOR	10μF,16V
	C340	QCYA1HK-332	CAPACITOR	0.0033μF,50V
	C341	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C349	QETF1CM-106	E CAPACITOR	10μF,16V
	C350	QCYA1HK-332	CAPACITOR	0.0033μF,50V
	L301	PELN0530-101JZ	COIL	100μH
	L302	PU58308-123J	COIL	12mH
△	T301	PELN0860	OSC TRANSFORMER	
△	T302	PELN0861	OSC TRANSFORMER	
	WR3	PW30504-04W2610	WIRE,MAIN-CN305	
	CN301	PEMC0714-011	CONNECTOR,(1-11) TERMINAL	
	CN302	PU59555-4	CONNECTOR,(1-4) A/C HEAD	
	CN303	PU59555-2	CONNECTOR,(1-2) FE HEAD	
	CN304	PU59555-6	CONNECTOR,(1-6) PRE/REC	
	CN305	PU59555-4	CONNECTOR,(1-4) DEMOD	

– SERVO SECTION –

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	IC401	HD49780NT	IC	
	IC472	XRA10358F	IC	
	IC473	BU4011BF	IC	
	IC474	MC14161BF	IC	
		or UPD4161BGS	IC	
	Q472	DTC143TS	TRANSISTOR	
	D401	1SS133	DIODE	
	D402	1SS133	DIODE	
	D403	1SS133	DIODE	
	D477	1SS133	DIODE	
	R401	QRSA08J-122YN	RESISTOR	1.2KΩ,1/10W
	R402	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R403	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
	R404	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
	R405	QRSA08J-474YN	RESISTOR	470KΩ,1/10W
	R406	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R407	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R408	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R409	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R410	QRSA08J-683YN	RESISTOR	68KΩ,1/10W
	R411	QRSA08J-225YN	RESISTOR	2.2MΩ,1/10W
	R412	QRSA08J-473YN	RESISTOR	47KΩ,1/10W
	R413	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
	R414	QRSA08J-122YN	RESISTOR	1.2KΩ,1/10W
	R415	QRSA08J-332YN	RESISTOR	3.3KΩ,1/10W
	R416	QRSA08J-223YN	RESISTOR	22KΩ,1/10W
	R417	QRSA08J-223YN	RESISTOR	22KΩ,1/10W
	R418	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
	R419	QRSA08J-273YN	RESISTOR	27KΩ,1/10W
	R421	QRSA08J-394YN	RESISTOR	390KΩ,1/10W
	R423	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
	R424	QRSA08J-273YN	RESISTOR	27KΩ,1/10W
	R428	QRD161J-564	RESISTOR	560KΩ,1/6W
	R429	QRSA08J-273YN	RESISTOR	27KΩ,1/10W
	R430	QRSA08J-475YN	RESISTOR	4.7MΩ,1/10W
	R431	QRSA08J-474YN	RESISTOR	470KΩ,1/10W
	R432	QRD161J-822	RESISTOR	8.2KΩ,1/6W
	R436	QRD161J-102	RESISTOR	1KΩ,1/6W
	R438	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
	R440	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R485	QRSA08J-273YN	RESISTOR	27KΩ,1/10W
	C401	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C402	QERF1AM-226	E CAPACITOR	22μF,10V
	C403	QERF1AM-226	E CAPACITOR	22μF,10V
	C404	QCSA1HJ-181	CAPACITOR	180pF,50V
	C405	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C406	PECA0780-223Z	M CAPACITOR	
	C407	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C408	PECA0780-563Z	M CAPACITOR	
	C409	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C410	QCYA1EK-103	CAPACITOR	0.01μF,25V
	C411	QCYA1EK-103	CAPACITOR	0.01μF,25V
	C412	QERF1CM-106	E CAPACITOR	10μF,16V
	C413	PECA0780-224Z	M CAPACITOR	
	C414	QCC31CK-223	CAPACITOR	0.022μF,16V
	C415	QERF1EM-475	E CAPACITOR	4.7μF,25V
	C416	QERF1EM-475	E CAPACITOR	4.7μF,25V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C417	QERF1CM-106	E CAPACITOR	10μF,16V
	C418	QERF1CM-106	E CAPACITOR	10μF,16V
	C419	QCC31CK-153	CAPACITOR	0.015μF,16V
	C420	PECA0780-124Z	M CAPACITOR	
	C421	QCSA1HJ-471	CAPACITOR	470pF,50V
	CN401	PU59555-3	CONNECTOR,(1-3) A/C HEAD	
	CN402	PEMC0915-004	FFC CONNECTOR,(1-4) DRUM MOTO	
⚠	CP401	ICP-N15	CIRCUIT PROTECTOR	

– SYSTEM CONTROL SECTION –

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	IC601	HD6433927A36F	QFP IC (MCU)	
	IC602	CAT35C104P-042	IC	
	IC603	S-80728AN-DR-X	IC	
		or RH5VA28AA-XE	IC	
	IC604	M50255P	IC	
	Q601	DTC124EF	TRANSISTOR	
	Q602	DTC124ES	TRANSISTOR	
	Q603	DTC124EF	TRANSISTOR	
	Q604	2SC1740S(RS)	TRANSISTOR	
		or 2SC3199(GB)-TJK	TRANSISTOR	
		or 2SC3311A(RS)	TRANSISTOR	
		or 2SC536SPA(FG)	TRANSISTOR	
	Q605	DTC124ES	TRANSISTOR	
	Q606	DTC124EF	TRANSISTOR	
	Q607	DTC114TF	TRANSISTOR	
	Q608	2SB1256	TRANSISTOR	
	Q609	DTC124EF	TRANSISTOR	
	Q611	DTC124EF	TRANSISTOR	
	D603	11ES2	DIODE	
	D604	11ES2	DIODE	
	D605	1SS133	DIODE	
	D606	1SS133	DIODE	
	D607	1SS133	DIODE	
	D608	11ES2	DIODE	
	D609	11ES2	DIODE	
	D610	1SS133	DIODE	
	D613	1SS133	DIODE	
	R601	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R602	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R603	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R604	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R605	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
	R606	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R607	QRD161J-102	RESISTOR	1KΩ,1/6W
	R608	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R609	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R610	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R611	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R612	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R613	QRD161J-102	RESISTOR	1KΩ,1/6W
	R614	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R615	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R616	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R617	QRD161J-0R0	RESISTOR	0Ω,1/6W
	R618	QRD161J-102	RESISTOR	1KΩ,1/6W
	R619	QRD161J-102	RESISTOR	1KΩ,1/6W
	R620	QRD161J-102	RESISTOR	1KΩ,1/6W
	R621	QRD161J-102	RESISTOR	1KΩ,1/6W
	R622	QRSA08J-681YN	RESISTOR	680Ω,1/10W
	R623	QRD161J-102	RESISTOR	1KΩ,1/6W
	R624	QRD161J-472	RESISTOR	4.7KΩ,1/6W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R625	QRD161J-152	RESISTOR	1.5KΩ,1/6W
	R626	QRD161J-681	RESISTOR	680Ω,1/6W
	R627	QRD161J-0R0	RESISTOR	0Ω,1/6W
	R628	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R629	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R630	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
	R631	QRSA08J-471YN	RESISTOR	470Ω,1/10W
	R632	QRSA08J-333YN	RESISTOR	33KΩ,1/10W
	R633	QRD161J-102	RESISTOR	1KΩ,1/6W
	R634	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R635	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R636	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R637	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R638	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R639	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R640	QRD161J-102	RESISTOR	1KΩ,1/6W
	R641	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R642	QRD161J-102	RESISTOR	1KΩ,1/6W
	R643	QRD161J-271	RESISTOR	270Ω,1/6W
	R644	QRD161J-271	RESISTOR	270Ω,1/6W
	R645	QRD161J-102	RESISTOR	1KΩ,1/6W
	R646	QRD161J-332	RESISTOR	3.3KΩ,1/6W
	R647	QRD161J-332	RESISTOR	3.3KΩ,1/6W
	R648	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R649	QRD161J-102	RESISTOR	1KΩ,1/6W
	R650	QRD161J-102	RESISTOR	1KΩ,1/6W
	R651	QRD161J-102	RESISTOR	1KΩ,1/6W
	R652	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R653	QRD161J-102	RESISTOR	1KΩ,1/6W
	R654	QRD161J-272	RESISTOR	2.7KΩ,1/6W
	R655	QRD161J-102	RESISTOR	1KΩ,1/6W
	R656	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R657	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R658	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R659	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R660	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R661	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R662	QRSA08J-683YN	RESISTOR	68KΩ,1/10W
	R663	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R664	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R665	QRD161J-102	RESISTOR	1KΩ,1/6W
	R666	QRSA08J-224YN	RESISTOR	220KΩ,1/10W
	R667	QRSA08J-303YN	RESISTOR	30KΩ,1/10W
	R668	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R669	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
	R670	QRSA08J-563YN	RESISTOR	56KΩ,1/10W
	R671	QRSA08J-333YN	RESISTOR	33KΩ,1/10W
	R672	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
	R673	QRD161J-0R0	RESISTOR	0Ω,1/6W
	R674	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R675	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
	R676	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R677	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
	R678	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
	R679	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
	R680	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
	R681	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
	R682	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R683	QRD161J-104	RESISTOR	100KΩ,1/6W
	R684	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
	R685	QRD161J-104	RESISTOR	100KΩ,1/6W
	R687	QRD161J-104	RESISTOR	100KΩ,1/6W

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	R689	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
	C601	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C602	QERF1CM-106	E CAPACITOR	10μF,16V
	C603	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C604	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C605	QERF0JM-107	E CAPACITOR	100μF,6.3V
	C606	QERF0JM-336	E CAPACITOR	33μF,6.3V
	C607	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C608	QERF0JM-227	E CAPACITOR	220μF,6.3V
	C618	QCSA1HJ-270	CAPACITOR	27pF,50V
	C619	QAT3120-450	TRIM CAPACITOR	45pF
	C622	QCC11EK-104	CAPACITOR	0.1μF,25V
	C625	QCBB1HJ-271	CAPACITOR	270pF,50V
	L601	PELN0530-101JZ	COIL	100μH
△	CF601	PEVB0497	RESONATOR	
△	X601	PEVB0422	CRYSTAL RESONATOR	
△	TH601	PESC1089-Z	POSI THERMISTOR	
	WR4	PW30504-05D4409	WIRE,MAIN-CN604	
	CN601	PEMC0915-016	FFC CONNECTOR,(1-16) DECK TER	
	CN602	PU59555-3	CONNECTOR,(1-3) SW/JACK	
	CN603	PU59555-4	CONNECTOR,(1-4) SHUTTLE	
	CN604	PU59555-5	CONNECTOR,(1-5) DEMOD	
	CN802	PEMC0915-009	FFC CONNECTOR,(1-9) DISP/SW	
△	CP601	ICP-F25	CIRCUIT PROTECTOR	

- REGULATOR SECTION -

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	IC801	UPC2405HF	IC	
	Q801	2SD2375(QP)	TRANSISTOR	
	Q802	2SD2375(QP)	TRANSISTOR	
	Q803	2SB1068(KU)	TRANSISTOR	
	D801	RD13ES-T1B2	ZENER DIODE	
	D802	HZ15CP	ZENER DIODE	
	D803	RD6.2ES-T1B1	ZENER DIODE	
	D804	11ES2	DIODE	
	R801	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
	R802	QRD161J-121	RESISTOR	120Ω,1/6W
	R803	QRD161J-102	RESISTOR	1KΩ,1/6W
	R804	QRD161J-101	RESISTOR	100Ω,1/6W
	R805	QRD161J-103	RESISTOR	10KΩ,1/6W
	R806	QRG02DJ-102X	OMF RESISTOR	1KΩ,2W
	R807	QRD161J-102	RESISTOR	1KΩ,1/6W
	C801	QFLA1HJ-103Z	M CAPACITOR	0.01μF,50V
	C802	QETC0JM-107	E CAPACITOR	100μF,6.3V
	C803	QETC1AM-226	E CAPACITOR	22μF,10V
	C804	QETC0JM-107	E CAPACITOR	100μF,6.3V
	C805	QETF1CM-226	E CAPACITOR	22μF,16V
	C806	QETC1CM-107	E CAPACITOR	100μF,16V
	C807	QETC1CM-107	E CAPACITOR	100μF,16V
	HS1	PQ46176	HEAT SINK	
	SCW1	SDSG3006Z	SCREW,X3 HEAT SINK	
	WR5	PW30218-0335814	WIRE,(MAIN-CN803)	
	CN801	PEMC0974	B TO B CONNECTOR,(1-10) SW REG	
	CN803	PU59555-3	CONNECTOR,(1-3) DEMOD	
△	CP801	ICP-N20	CIRCUIT PROTECTOR	
△	CP802	ICP-N20	CIRCUIT PROTECTOR	

- RF SW SECTION -

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	Q701	2SB810H,J	TRANSISTOR	
	D701	1SS133	DIODE	
	D702	1SS133	DIODE	
	D703	1SS133	DIODE	
	R701	QRSA08J-393YN	RESISTOR	39KΩ,1/10W
	R702	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	C701	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	L701	PU48530-100K	COIL	10μH
	L702	PU48530-100K	COIL	10μH
	CN701	PEMC0714-013	CONNECTOR,(1-13) TERMINAL	

****

VIDEO UNIT BOARD ASSEMBLY <05>

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA	PB10745A-02	VIDEO UNIT BOARD ASSY	
	IC1	TL8839P	IC	
	IC2	JCP0035	IC	
	Q1	2SA1576(QRS)	TRANSISTOR	
	Q2	2SC4081(QRS)	TRANSISTOR	
	Q3	2SA1576(QRS)	TRANSISTOR	
	Q4	2SC4081(QRS)	TRANSISTOR	
	Q5	2SC4081(QRS)	TRANSISTOR	
	Q6	2SC4081(QRS)	TRANSISTOR	
	Q7	2SC4081(QRS)	TRANSISTOR	
	Q8	DTC114WU	TRANSISTOR	
	Q9	2SC4081(QRS)	TRANSISTOR	
	Q10	2SA1576(QRS)	TRANSISTOR	
	Q11	DTC144WU	TRANSISTOR	
	Q12	DTC144WU	TRANSISTOR	
	Q13	DTA124EU	TRANSISTOR	
	Q14	2SA1576(QRS)	TRANSISTOR	
	Q15	2SC4081(QRS)	TRANSISTOR	
	D1	1SS133	DIODE	
	D2	1SS133	DIODE	
	D3	1SS133	DIODE	
	D4	1SS133	DIODE	
	D5	1SS133	DIODE	
	D7	1SS292	DIODE	
	R1	NRSA63J-681N	RESISTOR	680Ω,1/16W
	R2	NRSA63J-475N	RESISTOR	4.7MΩ,1/16W
	R3	NRSA63J-361N	RESISTOR	360Ω,1/16W
	R4	NRSA63J-103N	RESISTOR	10KΩ,1/16W
	R5	NRSA63J-102N	RESISTOR	1KΩ,1/16W
	R6	NRSA63J-475N	RESISTOR	4.7MΩ,1/16W
	R7	NRSA63J-681N	RESISTOR	680Ω,1/16W
	R8	QRS188J-102YN	RESISTOR	1KΩ,1/8W
	R9	NRSA63J-102N	RESISTOR	1KΩ,1/16W
	R10	NRSA63J-621N	RESISTOR	620Ω,1/16W
	R11	NRSA63J-331N	RESISTOR	330Ω,1/16W
	R12	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
	R13	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
	R14	NRSA63J-102N	RESISTOR	1KΩ,1/16W
	R15	NRSA63J-221N	RESISTOR	220Ω,1/16W
	R16	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
	R17	NRSA63J-392N	RESISTOR	3.9KΩ,1/16W
	R18	NVP1301-152N	V RESISTOR,N C BALANCE	
	R19	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
	R20	NRSA63J-681N	RESISTOR	680Ω,1/16W
	R21	NRSA63J-102N	RESISTOR	1KΩ,1/16W
	R22	NRSA63J-122N	RESISTOR	1.2KΩ,1/16W
	R23	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R24	NRSA63J-821N	RESISTOR	820Ω,1/16W
	R25	NVP1301-472N	V RESISTOR,PB Y LEVEL	
	R26	NRSA63J-333N	RESISTOR	33KΩ,1/16W
	R27	NRSA63J-561N	RESISTOR	560Ω,1/16W
	R28	NVP1301-223N	V RESISTOR,CARRIER	
	R29	NVP1301-103N	V RESISTOR,DEVIATION	
	R30	NRSA63J-432N	RESISTOR	4.3KΩ,1/16W
	R31	NRSA63J-122N	RESISTOR	1.2KΩ,1/16W
	R32	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
	R33	NRSA63J-561N	RESISTOR	560Ω,1/16W
	R34	NRSA63J-102N	RESISTOR	1KΩ,1/16W
	R35	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
	R36	NRSA63J-103N	RESISTOR	10KΩ,1/16W
	R37	NRSA63G-511N	RESISTOR	510Ω,1/16W
	R38	NRSA63J-103N	RESISTOR	10KΩ,1/16W
	R39	NRSA63J-102N	RESISTOR	1KΩ,1/16W
	R40	NRSA63J-102N	RESISTOR	1KΩ,1/16W
	R41	NRSA63J-102N	RESISTOR	1KΩ,1/16W
	R42	NVP1301-153N	V RESISTOR,EE Y LEVEL	
	R43	NRSA63J-823N	RESISTOR	82KΩ,1/16W
	R44	NRSA63J-334N	RESISTOR	330KΩ,1/16W
	R45	NVP1301-103N	V RESISTOR,W/D CLIP	
	R46	NRSA63J-103N	RESISTOR	10KΩ,1/16W
	R47	NRSA63J-434N	RESISTOR	430KΩ,1/16W
	R48	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
	R49	NRSA63J-105N	RESISTOR	1MΩ,1/16W
	R50	NRSA63J-331N	RESISTOR	330Ω,1/16W
	R51	NRSA63J-102N	RESISTOR	1KΩ,1/16W
	R52	NVP1301-222N	V RESISTOR,REC COLOR LEVEL	
	R53	NRSA63J-102N	RESISTOR	1KΩ,1/16W
	R54	NRSA63J-271N	RESISTOR	270Ω,1/16W
	R55	NRSA63J-333N	RESISTOR	33KΩ,1/16W
	R56	NRSA63J-333N	RESISTOR	33KΩ,1/16W
	R57	NRSA63J-102N	RESISTOR	1KΩ,1/16W
	R58	NRSA63J-102N	RESISTOR	1KΩ,1/16W
	R59	NRSA63J-102N	RESISTOR	1KΩ,1/16W
	R60	NRSA63J-132N	RESISTOR	1.3KΩ,1/16W
	C1	NCS31HJ-221A	CAPACITOR	220pF,50V
	C2	NCS31HG-561A	CAPACITOR	560pF,50V
	C3	NCS31HG-361A	CAPACITOR	360pF,50V
	C4	NCS31HJ-220A	CAPACITOR	22pF,50V
	C5	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C6	NCS31HJ-150A	CAPACITOR	15pF,50V
	C7	NCS31HJ-220A	CAPACITOR	22pF,50V
	C8	NCS31HJ-680A	CAPACITOR	68pF,50V
	C9	NCS31HG-121A	CAPACITOR	120pF,50V
	C10	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C11	NCF31CZ-473A	CAPACITOR	0.047μF,16V
	C12	QETC1HM-474	E CAPACITOR	0.47μF,50V
	C13	QCVB1CN-103	CAPACITOR	0.01μF,16V
	C14	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C15	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C16	NCS31HJ-390A	CAPACITOR	39pF,50V
	C17	NCS31HJ-180A	CAPACITOR	18pF,50V
	C18	NCS31HJ-220A	CAPACITOR	22pF,50V
	C19	QETC0JM-476	E CAPACITOR	47μF,6.3V
	C20	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C21	NCS31HJ-330A	CAPACITOR	33pF,50V
	C22	QETC1HM-474	E CAPACITOR	0.47μF,50V
	C24	QETC1EM-475	E CAPACITOR	4.7μF,25V
	C25	QETC1CM-106	E CAPACITOR	10μF,16V
	C26	QETC1AM-226	E CAPACITOR	22μF,10V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C27	QETC1CM-106	E CAPACITOR	10μF,16V
	C28	QETC0JM-107	E CAPACITOR	100μF,6.3V
	C29	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C30	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C31	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C32	QETC1HM-225	E CAPACITOR	2.2μF,50V
	C33	QETC1HM-474	E CAPACITOR	0.47μF,50V
	C34	NCS31HJ-620A	CAPACITOR	62pF,50V
	C35	NCS31HG-201A	CAPACITOR	200pF,50V
	C36	QETC1EM-475	E CAPACITOR	4.7μF,25V
	C37	NCB31EK-223A	CAPACITOR	0.022μF,25V
	C38	NCS31HG-130A	CAPACITOR	13pF,50V
	C39	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C40	QETC1HM-105	E CAPACITOR	1μF,50V
	C41	NCB31EK-223A	CAPACITOR	0.022μF,25V
	C42	NCS31HJ-101A	CAPACITOR	100pF,50V
	C43	NCS31HJ-390A	CAPACITOR	39pF,50V
	C44	QENC1EM-475	NP E CAPACITOR	4.7μF,25V
	C45	QETC1EM-475	E CAPACITOR	4.7μF,25V
	C46	NCF31CZ-473A	CAPACITOR	0.047μF,16V
	C47	QETC1HM-104	E CAPACITOR	0.1μF,50V
	C48	QETC1HM-474	E CAPACITOR	0.47μF,50V
	C49	NCB31CK-333A	CAPACITOR	0.033μF,16V
	C50	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C51	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C52	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C53	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C54	NCB31CK-473A	CAPACITOR	0.047μF,16V
	C55	QETC1EM-475	E CAPACITOR	4.7μF,25V
	C56	NCS31HJ-5R0A	CAPACITOR	5pF,50V
	C57	QETC1HM-105	E CAPACITOR	1μF,50V
	C58	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C59	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C60	QETC0JM-107	E CAPACITOR	100μF,6.3V
	C61	NCB31HK-103A	CAPACITOR	0.01μF,50V
	C62	NCB31HK-182A	CAPACITOR	0.0018μF,50V
	C63	NCS31HJ-300A	CAPACITOR	30pF,50V
	C64	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C65	NCB31CK-473A	CAPACITOR	0.047μF,16V
	C69	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C70	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C71	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	L1	PU59152-121J	COIL	120μH
	L2	PU59152-330J	COIL	33μH
	L3	PU59152-330J	COIL	33μH
	L4	PU59152-820J	COIL	82μH
	L5	PU59152-221J	COIL	220μH
	L6	PU59153-101K	COIL	100μH
	L7	PU59152-680J	COIL	68μH
	L8	PU48530-101K	COIL	100μH
	L9	PU59152-121J	COIL	120μH
	L10	PU59152-150J	COIL	15μH
	L11	PU48530-561J	COIL	560μH
	L12	PU59152-680J	COIL	68μH
	LPF1	PELN0477	LOW PASS FILTER	
	LPF2	PELN0856	LOW PASS FILTER	
	DL1	PEVB0515	COMB FILTER	
⚠	X1	PEVB0386	CRYSTAL RESONATOR	
	CN1	PEMC0712-111	PIN HEADER	
	CN2	PEMC0712-112	PIN HEADER	
	CN3	PEMC0712-111	PIN HEADER	

****

TERMINAL BOARD ASSEMBLY <06>

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
PWBA1	PB10775B-01	TERMINAL BOARD ASSEMBLY	
IC3	XRU4052BC	IC	
	or BU4052BC	IC	
	or MC14052BCP	IC	
IC4	XRA15218	IC	
	or BA15218	IC	
IC5	XRA15218N	IC	
	or BA15218N	IC	
Q1	2SC1740S(RS)	TRANSISTOR	
	or 2SC3199(GB)-TJK	TRANSISTOR	
Q2	2SC1740S(RS)	TRANSISTOR	
	or 2SC3199(GB)-TJK	TRANSISTOR	
Q3	DTA114ES	TRANSISTOR	
R1	QRD161J-101	RESISTOR	100Ω,1/6W
R2	QRD161J-101	RESISTOR	100Ω,1/6W
R3	QRD161J-101	RESISTOR	100Ω,1/6W
R4	QRD161J-101	RESISTOR	100Ω,1/6W
R8	QRD161J-223	RESISTOR	22KΩ,1/6W
R9	QRSA08J-223YN	RESISTOR	22KΩ,1/10W
R10	QRSA08J-203YN	RESISTOR	20KΩ,1/10W
R11	QRSA08J-203YN	RESISTOR	20KΩ,1/10W
R12	QRSA08J-203YN	RESISTOR	20KΩ,1/10W
R13	QRD161J-203	RESISTOR	20KΩ,1/6W
R14	QRD161J-473	RESISTOR	47KΩ,1/6W
R15	QRSA08J-473YN	RESISTOR	47KΩ,1/10W
R17	QRD161J-473	RESISTOR	47KΩ,1/6W
R18	QRD161J-104	RESISTOR	100KΩ,1/6W
R19	QRD161J-104	RESISTOR	100KΩ,1/6W
R21	QRD161J-473	RESISTOR	47KΩ,1/6W
R22	QRD161J-473	RESISTOR	47KΩ,1/6W
R23	QRD161J-473	RESISTOR	47KΩ,1/6W
R24	QRSA08J-203YN	RESISTOR	20KΩ,1/10W
R25	QRSA08J-203YN	RESISTOR	20KΩ,1/10W
R26	QRSA08J-203YN	RESISTOR	20KΩ,1/10W
R27	QRSA08J-203YN	RESISTOR	20KΩ,1/10W
R28	QRSA08J-122YN	RESISTOR	1.2KΩ,1/10W
R29	QRD161J-331	RESISTOR	330Ω,1/6W
R30	QRSA08J-331YN	RESISTOR	330Ω,1/10W
R31	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R32	QRSA08J-122YN	RESISTOR	1.2KΩ,1/10W
R33	QRD161J-562	RESISTOR	5.6KΩ,1/6W
R34	QRD161J-562	RESISTOR	5.6KΩ,1/6W
R35	QRD161J-122	RESISTOR	1.2KΩ,1/6W
R36	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R37	QRD161J-331	RESISTOR	330Ω,1/6W
R38	QRD161J-331	RESISTOR	330Ω,1/6W
R39	QRSA08J-122YN	RESISTOR	1.2KΩ,1/10W
R52	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
R706	QRG01DJ-331X	OMF RESISTOR	330Ω,1W
C11	QETC1AM-476	E CAPACITOR	47μF,10V
C12	QETC1AM-476	E CAPACITOR	47μF,10V
C19	QETC1HM-105	E CAPACITOR	1μF,50V
C20	QETC1HM-105	E CAPACITOR	1μF,50V
C21	QETC1EM-476	E CAPACITOR	47μF,25V
C22	QETC1AM-476	E CAPACITOR	47μF,10V
C26	QETC1AM-476	E CAPACITOR	47μF,10V
C27	QETC1AM-476	E CAPACITOR	47μF,10V
JA1	PEMC1009-03	PIN JACK,L OUT RCA	
JA2	PEMC1009-02	PIN JACK,R OUT RCA	
JA3	PEMC1010-03	PIN JACK(SW),L IN RCA	
JA4	PEMC1010-02	PIN JACK(SW),R IN RCA	
JA701	PEMC1019	RGB21PIN SOCKET,PERI-1	
CN1	PEMC0713-111	HOUSING,(1-14) MAIN	
CN2	PU59555-103	CONNECTOR,(1-3) SW/JACK	
CN701	PEMC0713-113	HOUSING,(1-13) VIDEO IN /OUT	

****

AUDIO UNIT BOARD ASSEMBLY <09>

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
PWBA	PB10716B	AUDIO UNIT BOARD ASSEMBLY	
IC1	JCP0038	IC	
Q1	2SC4081(R)	TRANSISTOR	
Q2	2SC4081(R)	TRANSISTOR	
R1	NRSA63J-475N	RESISTOR	4.7MΩ,1/16W
R2	NRSA63J-511N	RESISTOR	510Ω,1/16W
R3	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R4	NRSA63J-513N	RESISTOR	51KΩ,1/16W
R5	NVP1301-333NU	V RESISTOR,L DEVIATION	
R8	NRSA63J-822N	RESISTOR	8.2KΩ,1/16W
R9	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R10	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R11	NVP1301-153NZ	V RESISTOR,L CARRIER	
R12	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R13	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R14	NRSA63J-183N	RESISTOR	18KΩ,1/16W
R18	NRSA63J-303N	RESISTOR	30KΩ,1/16W
R19	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R20	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R22	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R23	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R24	NRSA63J-752N	RESISTOR	7.5KΩ,1/16W
R25	NVP1301-153NZ	V RESISTOR,R CARRIER	
R26	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R27	NRSA63J-822N	RESISTOR	8.2KΩ,1/16W
R30	NVP1301-333NU	V RESISTOR,R DEVIATION	
R31	NRSA63J-513N	RESISTOR	51KΩ,1/16W
R32	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R33	NRSA63J-511N	RESISTOR	510Ω,1/16W
R34	NRSA63J-475N	RESISTOR	4.7MΩ,1/16W
R35	NRSA63J-514N	RESISTOR	510KΩ,1/16W
R36	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R38	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R41	NRSA63J-101N	RESISTOR	100Ω,1/16W
R42	NRSA63J-101N	RESISTOR	100Ω,1/16W
R43	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R44	NRSA63J-154N	RESISTOR	150KΩ,1/16W
R45	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R46	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R47	NRSA63J-154N	RESISTOR	150KΩ,1/16W
R48	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R49	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R50	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R51	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R52	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R56	NRSA63J-101N	RESISTOR	100Ω,1/16W
R57	NRSA63J-101N	RESISTOR	100Ω,1/16W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C2	QETC1AM-336	E CAPACITOR	33µF,10V
C3	QFLC1HJ-473Z	M CAPACITOR	0.047µF,50V
C4	QETC1HM-225	E CAPACITOR	2.2µF,50V
C5	QFV21HJ-333	F CAPACITOR	0.033µF,50V
C6	QETC1AM-476	E CAPACITOR	47µF,10V
C7	QETC1CM-106	E CAPACITOR	10µF,16V
C8	QFLC1HJ-103Z	M CAPACITOR	0.01µF,50V
C9	QETC0JM-107	E CAPACITOR	100µF,6.3V
C10	NCB31HK-102A	CAPACITOR	0.001µF,50V
C11	QFLC1HJ-104Z	M CAPACITOR	0.1µF,50V
C12	QFLC1HJ-223Z	M CAPACITOR	0.022µF,50V
C13	NCB31HK-821A	CAPACITOR	820pF,50V
C14	QFLC1HJ-392Z	M CAPACITOR	0.0039µF,50V
C15	QFLC1HJ-333Z	M CAPACITOR	0.033µF,50V
C16	QETC1HM-105	E CAPACITOR	1µF,50V
C18	NCB31HK-561A	CAPACITOR	560pF,50V
C20	NCS31HJ-101A	CAPACITOR	100pF,50V
C21	NCS31HJ-101A	CAPACITOR	100pF,50V
C22	QFLC1HJ-392Z	M CAPACITOR	0.0039µF,50V
C23	NCB31HK-821A	CAPACITOR	820pF,50V
C24	QFLC1HJ-223Z	M CAPACITOR	0.022µF,50V
C25	QFLC1HJ-104Z	M CAPACITOR	0.1µF,50V
C26	NCB31HK-102A	CAPACITOR	0.001µF,50V
C27	QETC0JM-107	E CAPACITOR	100µF,6.3V
C28	QFLC1HJ-103Z	M CAPACITOR	0.01µF,50V
C29	QETC1CM-106	E CAPACITOR	10µF,16V
C30	QETC1AM-476	E CAPACITOR	47µF,10V
C31	QFLC1HJ-333Z	M CAPACITOR	0.033µF,50V
C32	QETC1HM-225	E CAPACITOR	2.2µF,50V
C33	QFLC1HJ-473Z	M CAPACITOR	0.047µF,50V
C34	QETC1AM-336	E CAPACITOR	33µF,10V
C36	QETC1CM-106	E CAPACITOR	10µF,16V
C38	QETC1CM-226	E CAPACITOR	22µF,16V
C39	QETC1CM-106	E CAPACITOR	10µF,16V
C40	QETC1HM-104	E CAPACITOR	0.1µF,50V
C41	QETC0JM-107	E CAPACITOR	100µF,6.3V
C42	QETC0JM-107	E CAPACITOR	100µF,6.3V
C43	QETC1AM-107	E CAPACITOR	100µF,10V
C44	QETC1CM-476	E CAPACITOR	47µF,16V
C45	QETC1AM-476	E CAPACITOR	47µF,10V
C46	QETC1CM-106	E CAPACITOR	10µF,16V
C47	NCB31EK-103A	CAPACITOR	0.01µF,25V
C48	QETC1CM-106	E CAPACITOR	10µF,16V
C49	QETC0JM-476	E CAPACITOR	47µF,6.3V
C50	NCF31CZ-104A	CAPACITOR	0.1µF,16V
C51	QFV21HJ-563	F CAPACITOR	0.056µF,50V
C52	QFV21HJ-563	F CAPACITOR	0.056µF,50V
C53	QETC1HM-225	E CAPACITOR	2.2µF,50V
C54	QETC1CM-106	E CAPACITOR	10µF,16V
C55	NCF31CZ-104A	CAPACITOR	0.1µF,16V
C56	QETC1HM-225	E CAPACITOR	2.2µF,50V
C57	QETC1CM-106	E CAPACITOR	10µF,16V
C58	NCF31CZ-104A	CAPACITOR	0.1µF,16V
C60	NCF31CZ-104A	CAPACITOR	0.1µF,16V
C61	NCF31CZ-104A	CAPACITOR	0.1µF,16V
L1	PELN0530-101JZ	COIL	100µH
L2	PELN0530-101JZ	COIL	100µH
L3	PELN0530-101JZ	COIL	100µH
BPF1	PU60610	BAND PASS FILTER(1.4MHZ)	
BPF2	PU60611	BAND PASS FILTER(1.8MHZ)	
JP1	PEMC0919-126	PIN HEADER	
JP2	PEMC0919-126	PIN HEADER	

#⚠ REF No. PART No. PART NAME, DESCRIPTION

****

AUDIO/CONTROL HEAD BOARD ASSY <12>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
PWB1	PB40046-01-02	AUDIO CONTROL HEAD BOARD
CN201	PU59555-104	CONNECTOR
CN202	PU59555-103	CONNECTOR

****

DEMOD BOARD ASSEMBLY <14>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PWBA1	PB10679F	DEMOD BOARD ASSEMBLY	
IC201	CF70088	IC	
IC202	SM5840EP	IC	
IC203	TDA1312	IC	
IC204	M5201L	IC	
	or M5201AL	IC	
IC205	M5201L	IC	
	or M5201AL	IC	
IC206	XRA15218	IC	
IC207	M5278L05	IC	
IC210	TC7S04F	IC	
Q201	2SC4081(RS)	TRANSISTOR	
Q202	2SC3931(BC)	TRANSISTOR	
Q203	3SK181(5)	FE TRANSISTOR	
Q204	DTC144EU	TRANSISTOR	
Q205	DTA114WU	TRANSISTOR	
Q206	FMA3	TRANSISTOR	
Q208	DTA114TU	TRANSISTOR	
Q209	2SA1532(C)	TRANSISTOR	
Q210	DTC114EU	TRANSISTOR	
Q211	2SD1450S,T	TRANSISTOR	
D201	DAP202U	DIODE	
D202	DAP202U	DIODE	
D203	1SS133	DIODE	
R204	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R206	NRSA63J-682N	RESISTOR	6.8KΩ,1/16W
R207	NRSA63J-122N	RESISTOR	1.2KΩ,1/16W
R208	NRSA63J-101N	RESISTOR	100Ω,1/16W
R209	QRSA08J-821YN	RESISTOR	820Ω,1/10W
R210	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R211	NRSA63J-124N	RESISTOR	120KΩ,1/16W
R212	NRSA63J-560N	RESISTOR	56Ω,1/16W
R213	NRSA63J-121N	RESISTOR	120Ω,1/16W
R214	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R215	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R216	NRSA63J-271N	RESISTOR	270Ω,1/16W
R218	QRSA08J-821YN	RESISTOR	820Ω,1/10W
R222	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R223	NRVA63D-471N	RESISTOR	470Ω,1/16W
R225	QRD161J-101	RESISTOR	100Ω,1/6W
R231	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R232	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R233	NRSA63J-432N	RESISTOR	4.3KΩ,1/16W
R234	NRSA63J-561N	RESISTOR	560Ω,1/16W
R235	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R236	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R238	NRSA63J-0R0N	RESISTOR	0Ω,1/16W

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
R239	NRSA63J-273N	RESISTOR	27KΩ,1/16W
R240	NRSA63J-561N	RESISTOR	560Ω,1/16W
R241	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R242	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R243	NRSA63J-432N	RESISTOR	4.3KΩ,1/16W
R245	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R246	NRSA63J-273N	RESISTOR	27KΩ,1/16W
R247	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R248	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
R249	NRSA63J-100N	RESISTOR	10Ω,1/16W
R255	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R256	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R257	NRSA63J-101N	RESISTOR	100Ω,1/16W
R259	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R261	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R262	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R277	NRSA63J-331N	RESISTOR	330Ω,1/16W
R278	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R279	NRSA63J-912N	RESISTOR	9.1KΩ,1/16W
R280	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R282	QRD161J-912	RESISTOR	9.1KΩ,1/6W
R283	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R290	NRSA63J-273N	RESISTOR	27KΩ,1/16W
R291	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R292	QRSA08J-333YN	RESISTOR	33KΩ,1/10W
R293	NRSA63J-563N	RESISTOR	56KΩ,1/16W
R294	NRSA63J-154N	RESISTOR	150KΩ,1/16W
R295	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R296	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R297	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R298	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
C202	NCF31HZ-473A	CAPACITOR	0.047μF,50V
C205	NCF31HZ-473A	CAPACITOR	0.047μF,50V
C206	NCB31HK-222A	CAPACITOR	0.0022μF,50V
C207	NCF31HZ-473A	CAPACITOR	0.047μF,50V
C208	NCF31HZ-473A	CAPACITOR	0.047μF,50V
C209	NCB31HK-222A	CAPACITOR	0.0022μF,50V
C210	NCF31HZ-473A	CAPACITOR	0.047μF,50V
C211	NCF31HZ-473A	CAPACITOR	0.047μF,50V
C213	NCB31HK-103A	CAPACITOR	0.01μF,50V
C214	NCB31HK-103A	CAPACITOR	0.01μF,50V
C215	NCB31HK-103A	CAPACITOR	0.01μF,50V
C216	NCB31HK-103A	CAPACITOR	0.01μF,50V
C217	NCB31HK-103A	CAPACITOR	0.01μF,50V
C218	NCB31HK-103A	CAPACITOR	0.01μF,50V
C219	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C220	NCF31HZ-473A	CAPACITOR	0.047μF,50V
C221	QEKF1CM-226	E CAPACITOR	22μF,16V
C225	QCYA1HK-473	CAPACITOR	0.047μF,50V
C226	QEKF1CM-226	E CAPACITOR	22μF,16V
C228	QCYA1HK-221	CAPACITOR	220pF,50V
C233	QEKF1HM-225	E CAPACITOR	2.2μF,50V
C234	QEKF1CM-226	E CAPACITOR	22μF,16V
C236	QEKF1HM-225	E CAPACITOR	2.2μF,50V
C237	QCYA1HK-473	CAPACITOR	0.047μF,50V
C238	QEKF1CM-107	E CAPACITOR	100μF,16V
C239	QFN31HJ-683	M CAPACITOR	0.068μF,50V
C240	QFN31HJ-122	M CAPACITOR	0.0012μF,50V
C241	QEKF1CM-226	E CAPACITOR	22μF,16V
C242	QCYA1HK-473	CAPACITOR	0.047μF,50V
C243	QETC1HM-105	E CAPACITOR	1μF,50V
C244	QFN31HJ-332	M CAPACITOR	0.0033μF,50V

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
C245	QCYA1HK-473	CAPACITOR	0.047μF,50V
C246	QFN31HJ-683	M CAPACITOR	0.068μF,50V
C247	QFN31HJ-122	M CAPACITOR	0.0012μF,50V
C248	QFN31HJ-332	M CAPACITOR	0.0033μF,50V
C249	QETC1HM-105	E CAPACITOR	1μF,50V
C251	QEKF1CM-226	E CAPACITOR	22μF,16V
C252	QETC1CM-226	E CAPACITOR	22μF,16V
C255	QEKF1CM-226	E CAPACITOR	22μF,16V
C271	QEKF1CM-226	E CAPACITOR	22μF,16V
C272	QEKF1CM-226	E CAPACITOR	22μF,16V
C273	QEKF1CM-226	E CAPACITOR	22μF,16V
C278	QCYA1HK-473	CAPACITOR	0.047μF,50V
C279	NCF31HZ-473A	CAPACITOR	0.047μF,50V
C282	QEKF1HM-105	E CAPACITOR	1μF,50V
C283	QEKF1HM-105	E CAPACITOR	1μF,50V
C290	NCB31HK-103A	CAPACITOR	0.01μF,50V
C291	NCF31HZ-473A	CAPACITOR	0.047μF,50V
C292	NCT06CH-680A	CAPACITOR	68pF,50V
C293	NCB31HK-102A	CAPACITOR	0.001μF,50V
C294	NCF31HZ-473A	CAPACITOR	0.047μF,50V
C297	QCYA1HK-221	CAPACITOR	220pF,50V
C298	NCB31HK-221A	CAPACITOR	220pF,50V
C299	QCYA1HK-221	CAPACITOR	220pF,50V
C301	NCB31HK-221A	CAPACITOR	220pF,50V
C302	NCB31HK-221A	CAPACITOR	220pF,50V
C303	QCYA1HK-221	CAPACITOR	220pF,50V
C304	QCYA1HK-221	CAPACITOR	220pF,50V
C305	NCB31HK-221A	CAPACITOR	220pF,50V
C306	QCYA1HK-473	CAPACITOR	0.047μF,50V
C307	NCF31HZ-473A	CAPACITOR	0.047μF,50V
C310	QEK41HM-105	E CAPACITOR	1μF,50V
C312	QEKF1HM-105	E CAPACITOR	1μF,50V
L206	PU59152-120J	COIL	12μH
LPF201	PU60332	BAND PASS FILTER	
LC201	PU59736-102	N FILTER	
LC203	PU59736-102	N FILTER	
LC209	QRD161J-331	RESISTOR	330Ω,1/6W
LC210	QRD161J-331	RESISTOR	330Ω,1/6W
LC211	QRD161J-331	RESISTOR	330Ω,1/6W
△ X201	PEVB0484	CRYSTAL RESONATOR	
BKT1	PQ34523	SHIELD FRAME	
SLD1	PQ34522	SHIELD CASE	
CN201	PU59555-3	CONNECTOR,(1-3) MAIN	
CN202	PU59555-3	CONNECTOR,(1-3) MAIN	
CN203	PU59555-5	CONNECTOR,(1-5) MAIN	
CN204	PU59555-4	CONNECTOR,(1-4) MAIN	

****

DISPLAY/SWITCH BOARD ASSEMBLY <28>

PWBA1	PB10779B1-01	DISPLAY/SWITCH BOARD ASSEMBLY
IC1	UPD16311GC(K)	IC
	or UPD16311GC(E)	IC
IC2	GP1U801X	IR DETECT UNIT
D1	RD4.7ES-T1B2	ZENER DIODE
D2	1SS132	DIODE
D3	1SS132	DIODE
D4	1SS132	DIODE

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
D5	1SS132	DIODE	
D6	1SS132	DIODE	
D7	1SS132	DIODE	
D8	SLH-34DC3F	LE DIODE,HYPER BASS	
D9	11ES2	DIODE	
D11	1SS132	DIODE	
D21	1SS132	DIODE,VIDEO PLUS	
D25	1SS132	DIODE,NICAM	
R1	QRD161J-103	RESISTOR	10KΩ,1/6W
R2	QRD161J-333	RESISTOR	33KΩ,1/6W
R3	QRD161J-333	RESISTOR	33KΩ,1/6W
R4	QRD161J-333	RESISTOR	33KΩ,1/6W
R5	QRD161J-333	RESISTOR	33KΩ,1/6W
R6	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R7	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R8	QRD161J-102	RESISTOR	1KΩ,1/6W
R9	QRD161J-151	RESISTOR	150Ω,1/6W
R10	QRD161J-103	RESISTOR	10KΩ,1/6W
R11	QRD161J-333	RESISTOR	33KΩ,1/6W
R12	QRD161J-103	RESISTOR	10KΩ,1/6W
R13	QRD161J-331	RESISTOR	330Ω,1/6W
R14	QRD161J-151	RESISTOR	150Ω,1/6W
R15	QRD161J-103	RESISTOR	10KΩ,1/6W
R17	QRD161J-331	RESISTOR	330Ω,1/6W
RA1	QRB045J-333XM	RESISTOR ARRAY	33KΩ,1/8W
C1	QETC0JM-107	E CAPACITOR	100μF,6.3V
C2	QETC1HM-106	E CAPACITOR	10μF,50V
C3	QCFB1HZ-473	CAPACITOR	0.047μF,50V
C4	QCFB1HZ-473	CAPACITOR	0.047μF,50V
C5	QCSB1HJ-330	CAPACITOR	33pF,50V
C7	QCVB1CM-103	CAPACITOR	0.01μF,16V
C8	QCFB1HZ-104	CAPACITOR	0.1μF,50V
C9	QCSB1HJ-330	CAPACITOR	33pF,50V
C10	QEK60JM-476	E CAPACITOR	47μF,6.3V
C11	QCVB1CM-103	CAPACITOR	0.01μF,16V
C12	QETC1AM-227	E CAPACITOR	220μF,10V
L1	PU48530-101J	COIL	100μH
S1	PESW0525-02Z	TACT SWITCH,CH+	
S2	PESW0525-02Z	TACT SWITCH,REC	
S3	PESW0525-02Z	TACT SWITCH,PAUSE	
S4	PESW0525-02Z	TACT SWITCH,CH–	
S5	PESW0525-02Z	TACT SWITCH,PLAY	
S6	PESW0525-02Z	TACT SWITCH,STOP	
S9	PESW0525-02Z	TACT SWITCH,SP/LP	
S19	PESW0525-02Z	TACT SWITCH,MIX	
S20	PESW0525-02Z	TACT SWITCH,HYPER BASS	
S30	PESW0525-02Z	TACT SWITCH,A.DUB	
S31	PESW0525-02Z	TACT SWITCH,DISP OFF	
S34	PESW0525-02Z	TACT SWITCH,SIMUL	
S51	PESW0551	SLIDE SWITCH,TV SOUND	
FDP1	PEDP0106	FLUORESCENT DISPLAY PANEL	
HD1	PQM30038-2-2	LED HOLDER,D8	
HD2	PQ31334-1-2	D.HOLDER (R)	
HD3	PQ31333-1-2	D.HOLDER (L)	
CN1	PEMC0915-109	FFC CONNECTOR,(1-9) MAIN	
CN2	PEMC0889-009	B TO B CONNECTOR,(1-9) MAIN	

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	

* * *

SWITCH/JACK BOARD ASSEMBLY <36>

PWBA2	PB10779B2-01	SWITCH/JACK BOARD ASSEMBLY	
D17	SLH-34VC3F	LE DIODE,OPERATE	
D101	1SS133	DIODE	
D102	1SS133	DIODE	
C110	PU60676-223	E CAPACITOR	0.022μF,5.5V
S10	PESW0525-02Z	TACT SWITCH,CANCEL	
S11	PESW0525-02Z	TACT SWITCH,TIMER	
S12	PESW0525-02Z	TACT SWITCH,OPERATE	
S13	PESW0525-02Z	TACT SWITCH,START+	
S14	PESW0525-02Z	TACT SWITCH,START–	
S15	PESW0525-02Z	TACT SWITCH,STOP+	
S16	PESW0525-02Z	TACT SWITCH,STOP–	
CL1	PU59311-4	WIRE CLAMP	
HD1	PQ43214	LED HOLDER,D17	
JA101	PEMC1008	PIN JACK(SW),V-L-R IN	
JA102	PU60659	MINI JACK,R.PAUSE	
CN3	PEMC0825-009	B TO B CONNECTOR,(1-9)DISPLAY	
CN101	PU59555-2	CONNECTOR,(1-2) MAIN	
CN102	PU59555-3	CONNECTOR,(1-3) TERMINAL	
CN103	PU59555-3	CONNECTOR,(1-3) MAIN	

* * *

PRE/REC AMP BOARD ASSEMBLY <43>

PWBA1	PB10771B-01	PRE/REC BOARD ASSEMBLY	
IC501	AN3389SB-XE	IC	
IC1001	AN3380NK	IC	
Q503	2SC4081(QRS)	TRANSISTOR	
Q504	2SC4081(QRS)	TRANSISTOR	
Q505	2SA1576(QRS)	TRANSISTOR	
Q506	2SC4081(QRS)	TRANSISTOR	
Q507	2SC4081(QRS)	TRANSISTOR	
Q508	DTC144WU	TRANSISTOR	
Q512	DTC114WU	TRANSISTOR	
Q514	DTA124EU	TRANSISTOR	
Q1001	DTC124TU	CHIP D.TRANSISTOR	
Q1002	DTC124TU	CHIP D.TRANSISTOR	
Q1003	DTC124TU	CHIP D.TRANSISTOR	
Q1004	DTC114WU	TRANSISTOR	
D501	1SS133	DIODE	
D502	1SS133	DIODE	
D505	1SS133	DIODE	
D508	DAN202U	DIODE	
R501	QRSA08J-332YN	RESISTOR	3.3KΩ,1/10W
R509	QRSA08J-182YN	RESISTOR	1.8KΩ,1/10W
R510	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
R514	QRSA08J-681YN	RESISTOR	680Ω,1/10W
R515	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R516	QRSA08J-751YN	RESISTOR	750Ω,1/10W
R517	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
R518	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
R519	QRSA08J-391YN	RESISTOR	390Ω,1/10W
R520	QRSA08J-391YN	RESISTOR	390Ω,1/10W
R521	QRSA08J-911YN	RESISTOR	910Ω,1/10W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R522	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
R523	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
R524	QRSA08J-821YN	RESISTOR	820Ω,1/10W
R525	QRSA08J-152YN	RESISTOR	1.5KΩ,1/10W
R526	QRSA08J-122YN	RESISTOR	1.2KΩ,1/10W
R527	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R528	QRSA08J-122YN	RESISTOR	1.2KΩ,1/10W
R531	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R532	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
R533	QRSA08J-272YN	RESISTOR	2.7KΩ,1/10W
R534	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R535	QRSA08J-123YN	RESISTOR	12KΩ,1/10W
R536	NRVA62D-433N	RESISTOR	43KΩ,1/16W
R539	QRD161J-334	RESISTOR	330KΩ,1/6W
R541	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R542	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R543	QRSA08J-301YN	RESISTOR	300Ω,1/10W
R544	QRSA08J-301YN	RESISTOR	300Ω,1/10W
R545	QRSA08J-561YN	RESISTOR	560Ω,1/10W
R548	QRSA08J-224YN	RESISTOR	220KΩ,1/10W
R550	QRSA08J-181YN	RESISTOR	180Ω,1/10W
R552	QRSA08J-101YN	RESISTOR	100Ω,1/10W
R554	QRSA08J-331YN	RESISTOR	330Ω,1/10W
R570	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R571	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R1001	QRSA08J-273YN	RESISTOR	27KΩ,1/10W
R1002	QRSA08J-101YN	RESISTOR	100Ω,1/10W
R1003	QRSA08J-101YN	RESISTOR	100Ω,1/10W
R1004	QRSA08J-274YN	RESISTOR	270KΩ,1/10W
R1005	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
R1006	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
R1007	QRSA08J-153YN	RESISTOR	15KΩ,1/10W
R1010	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R1011	QRD161J-102	RESISTOR	1KΩ,1/6W
R1012	QRSA08J-560YN	RESISTOR	56Ω,1/10W
R1013	QRSA08J-560YN	RESISTOR	56Ω,1/10W
C504	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C505	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C506	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C507	QCSA1HJ-331	CAPACITOR	330pF,50V
C508	QCSA1HJ-150	CAPACITOR	15pF,50V
C509	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C510	QCSA1HJ-330	CAPACITOR	33pF,50V
C511	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C512	QCSA1HJ-390	CAPACITOR	39pF,50V
C513	QCSA1HJ-471	CAPACITOR	470pF,50V
C514	QCSA1HJ-160	CAPACITOR	16pF,50V
C515	QCSA1HJ-7R0	CAPACITOR	7pF,50V
C516	QCC11CJ-104	CAPACITOR	0.1μF,16V
C517	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C518	QCSA1HJ-391	CAPACITOR	390pF,50V
C520	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C521	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C522	QFV11HJ-104	F CAPACITOR	0.1μF,50V
C523	QCYA1HK-333	CAPACITOR	0.033μF,50V
C524	QCSA1HJ-680	CAPACITOR	68pF,50V
C525	QCSA1HJ-560	CAPACITOR	56pF,50V
C526	QCYA1HK-333	CAPACITOR	0.033μF,50V
C527	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C528	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C529	QCYA1HK-333	CAPACITOR	0.033μF,50V
C530	QCSA1HJ-680	CAPACITOR	68pF,50V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C531	QCSA1HJ-560	CAPACITOR	56pF,50V
C532	QCYA1HK-333	CAPACITOR	0.033μF,50V
C533	QFV11HJ-104	F CAPACITOR	0.1μF,50V
C534	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C535	QCC11CJ-104	CAPACITOR	0.1μF,16V
C536	QER61CM-476	E CAPACITOR	47μF,16V
C537	QER60JM-476	E CAPACITOR	47μF,6.3V
C538	QCC11CJ-104	CAPACITOR	0.1μF,16V
C539	QFV11HJ-103	F CAPACITOR	0.01μF,50V
C540	QCSA1HJ-470	CAPACITOR	47pF,50V
C541	QCSA1HJ-390	CAPACITOR	39pF,50V
C543	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C545	QCVB1CN-103	CAPACITOR	0.01μF,16V
C549	QCFA1CZ-224	CAPACITOR	0.22μF,16V
C550	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C554	QCFA1HZ-223	CAPACITOR	0.022μF,50V
C1001	QCFA1CZ-104	CAPACITOR	0.1μF,16V
C1002	QCYA1HK-471	CAPACITOR	470pF,50V
C1003	QCYA1HK-152	CAPACITOR	0.0015μF,50V
C1004	QCYA1HK-152	CAPACITOR	0.0015μF,50V
C1005	QCYA1HK-102	CAPACITOR	0.001μF,50V
C1006	QCYA1HK-102	CAPACITOR	0.001μF,50V
C1007	QCFA1CZ-224	CAPACITOR	0.22μF,16V
C1008	QCYA1HK-471	CAPACITOR	470pF,50V
C1009	QEK60JM-107	E CAPACITOR	100μF,6.3V
C1010	QCFA1HZ-333	CAPACITOR	0.033μF,50V
C1011	QCVB1CN-103	CAPACITOR	0.01μF,16V
C1012	QCFA1CZ-224	CAPACITOR	0.22μF,16V
C1013	QCSA1HJ-470	CAPACITOR	47pF,50V
C1014	QCSA1HJ-101	CAPACITOR	100pF,50V
C1015	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C1016	QCFA1HZ-103	CAPACITOR	0.01μF,50V
L501	PU54223-470J	COIL	47μH
L503	PU54223-680K	COIL	68μH
L504	PU59152-560J	COIL	56μH
L505	PU59152-220J	COIL	22μH
L506	PU59152-470J	COIL	47μH
L507	PU59152-470J	COIL	47μH
L508	PU59152-121J	COIL	120μH
L509	PU59152-330J	COIL	33μH
L510	PU59152-180J	COIL	18μH
L1001	PELN0530-101JZ	COIL	100μH
BKT1	PQ21577	SHIELD FRM(PRE)	
CN501	PEMC0978-118	B TO B CONNECTOR,(1-18) MAIN	
CN502	PEMC1003-009	CONNECTOR(1-9)UPPER DRUM BOAR	
CN1001	PU59555-106	CONNECTOR,(1-6) MAIN	

****

DECK TERMINAL BOARD ASSEMBLY <51>

PWBA	PB10715B-03	DECK TERMINAL BOARD ASSY	
Q1,Q2	PU61321-1-1	TAPE SENSOR,X2 (Q1 Q2)	
TH1,TH3	NTH5D473KB	THERMISTOR,X2	
IC1	M66007P	IC	
D1	GL381J	LE DIODE	
R1	QRD161J-102	RESISTOR	1KΩ,1/6W
R2	QRD161J-102	RESISTOR	1KΩ,1/6W
R3	QRD161J-472	RESISTOR	4.7KΩ,1/6W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R4	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R5	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R6	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R7	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R8	QRD161J-103	RESISTOR	10KΩ,1/6W
	R9	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R10	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R11	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R12	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R13	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R16	QRD161J-221	RESISTOR	220Ω,1/6W
	R17	QRD161J-820	RESISTOR	82Ω,1/6W
	R18	QRD161J-221	RESISTOR	220Ω,1/6W
	R20	QRD161J-102	RESISTOR	1KΩ,1/6W
	R21	QRD161J-223	RESISTOR	22KΩ,1/6W
	R22	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R23	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R24	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R25	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R26	QRD161J-563	RESISTOR	56KΩ,1/6W
	R27	QRD161J-103	RESISTOR	10KΩ,1/6W
	R28	QRD161J-103	RESISTOR	10KΩ,1/6W
	R29	QRD161J-103	RESISTOR	10KΩ,1/6W
	R30	QRD161J-103	RESISTOR	10KΩ,1/6W
	R35	QRD161J-390	RESISTOR	39Ω,1/6W
	R36	QRD161J-101	RESISTOR	100Ω,1/6W
	C1	QCVB1CM-103	CAPACITOR	0.01μF,16V
	C2	QCVB1CM-103	CAPACITOR	0.01μF,16V
	C3	QCBB1HJ-101	CAPACITOR	100pF,50V
	C4	QCVB1CM-103	CAPACITOR	0.01μF,16V
	SW1	PU61320	S CASS.SWITCH	
	S1	PU61319	REC SAFETY SWITCH	
	PS1	PU61318	REEL SENSOR, TAKE UP	
	PS2	PU61318	REEL SENSOR, SUPPLY	
	CN1	PEMC0918-016	FFC CONNECTOR	
	CN2	PU60642	7PIN CONNECTOR	
	CN6	PU59555-4	CONNECTOR	

****

LOADING MDA BOARD ASSEMBLY <55>

	PWBA	PB10715A2	LOADING MDA BOARD ASSY	
⚠	IC101	BA6418N	IC	
⚠		or XRA6418N	IC	
	C101	QETC1CM-476	E CAPACITOR	47μF,16V
	WR1	PW30218-04416	WIRE	
	CN101	PU59555-104	CONNECTOR	

SECTION 6
TECHNICAL INFORMATION

6.1 SYSCON CIRCUIT

6.1.1 Syscon CPU pin function (IC601) 1/2

PIN NO.	LABEL	IN/OUT	NOTE
1	PERI2.SEL	IN	PELI-2 CONNECTOR SELECT
2	PDOWN	IN	POWER DOWN DETECT(POWER DOWN H - L)
3	NC	-	NC
4	AVGFM	IN	AUTO TRACKING DATA(AVERAGE VOLTAGE OF PB FM LEVEL) INPUT
5	AVSS	-	GND
6	TEST	-	GND
7	X2	-	MAIN SYSTEM CLOCK(10MHz)
8	X1	-	MAIN SYSTEM CLOCK(10MHz)
9	VSS	-	GND
10	OSC1	IN	SUB SYSTEM CLOCK
11	OSC2	OUT	SUB SYSTEM CLOCK
12	RESET	IN	RESET AT CONNECT VCR TO AC
13	(NMI)	-	NC
14	EX DATA	OUT	ABIT EXP DATA FOR CH PLS CONTROL
15	S.ID IN	IN	SCRAMBLE DETECT
16	P.MUTE	OUT	PICTURE MUTE CONTROL(MUTE ON:H)
17	SYNC DET	IN	SYNC DETECT(NO SYNC:H)
18	LOCKDET	IN	TUNING LOCK CHECK
19	MCE	OUT	MEMORY IC CHIP ENABLE
20	EE	OUT	EE MODE:L
21	R.PAUSE	IN	REMOTE PAUSE CONTROL(PAUSE ON:L)
22	TU FG	IN	TAKE-UP REEL ROTATION DET/TAPE REMAIN
23	PCTL	OUT	POWER CONTROL(POWER ON:H)
24	SUP FG	IN	SUPPLY REEL ROTATION DET/TAPE REMAIN
25	V.MUTE	OUT	VIDEO MUTE:H
26	HRECST	OUT	HiFi REC START:L
27	FEHCTL	OUT	FLYING ERASE HEAD CONTROL(FE ON:H)
28	AMUTE	OUT	AUDIO MUTE CONTROL(MUTE ON:L)
29	AI DATA	OUT	AUDIO CONTROL DATA OUTPUT
30	AI CLK	OUT	AUDIO DATA TRANSFER CLOCK
31	H SEL	OUT	HEAD SELECT CONTROL(SP:L/LP:M/EP:H)
32	A/M/S	OUT	PRE/REC CIRCUIT CONTROL(AUTO:M/MANUAL:H/S&S:L)
33	REC	OUT	REC:H
34	RECST	OUT	REC START:H
35	TU-DATA	OUT	TUNING CONTROL DATA
36	S-CLK	OUT	DATA TRANSFER CLOCK
37	SERVO	OUT	CAPSTAN MOTOR CONTROL(SERVO:L/MECHACON:H)
38	PAUSE	OUT	CAPSTAN MOTOR CONTROL(PAUSE:L)
39	MECHA DATA	IN	MECHANISM MODE CONTROL DATA INPUT
40	MECHA CLK	OUT	MECHANISM MODE DATA TRANSFER CLOCK

Table 6-1-1-A SYSCON CPU pin function (1/2)

6.1.2 Syscon CPU pin function (IC601) 2/2

PIN NO.	LABEL	IN/OUT	NOTE
41	JSA	IN	JOG DIAL PULSE INPUT
42	JSB	IN	JOG DIAL PULSE INPUT
43	STL	IN	SHUTTLE SWITCH
44	CPLS	IN	INDEX CONTROL
45	VPCTL	OUT	V.PULSE ADDITION TIMING CONTROL
46	CAPREV	OUT	CAPSTAN MOTOR CONTROL(FWD:H/REV:L)
47	OS CE	OUT	ON SCREEN CHIP ENABLE
48	RAEOUT	OUT	REMOTE PAUSE CONTROL OUTPUT
49	EXP DATA	OUT	ABIT EXP DATA FOR CH PLS CONTROL
50	RC IN	IN	REMOTE CONTROL DATA INPUT
51	I2C CLK	OUT	NICAM DATA TRANSFER CLOCK
52	CTLP	IN	CTL PULSE INPUT(MODE DETECT/BLANK PORTION DET)
53	I2C DATA	OUT	NICAM CTL DATA OUTPUT
54	DEM MUTE	OUT	DEMOD MUTE CONTROL(MUTE ON:H)
55	LCM1	OUT	LOADING MOTOR DRIVE(1)
56	LCM2	OUT	LOADING MOTOR DRIVE(2)
57	S-OUT	OUT	ON SCREEN CONTROL DATA
58	S-IN	IN	ON SCREEN /FDP CONTROL DATA
59	S-CLK	OUT	DATA TRANSFER CLOCK
60	SERVO DATA	OUT	SERVO IC CONTROL DATA
61	M-DATA	OUT	MEMORY IC DATA
62	SERVO CLK	OUT	DATA TRANSFER CLOCK
63	VCC	-	SYSTEM POWER
64	STB	OUT	CLOCK OUTPUT PERMISSION
65	TUCTL	OUT	TUNER MODE
66	N.D	IN	NORMAL AUDIO DETECT(NORMAL AUDIO:L)
67	CPLS	IN	INDEX CONTROL
68	VUP	OUT	CAPSTAN MOTOR VOLTAGE UP(13V-17V)
69	CAP FG	IN	TAPE SPEED DETECT/BACK SPACE COUNT
70	DUTY I/O	IN/OUT	IN/OUT INDEX DATA CONTROL
71	D.FF	IN	DRUM ROTATION DETECT/REC TIMING CONTROL
72	AVCC	-	SYSTEM POWER(for ANALOG)
73	-	-	GND
74	SPEED CTL V	OUT	TAPE SPEED CTL VOLTAGE OUTPUT
75	DRUM V	OUT	DRUM MOTOR CONTROL
76	CAP V	OUT	CAPSTAN MOTOR CONTROL
77	PROTECT	IN	POWER PROTECT DETECT(POWER OFF:L)
78	A.LEVEL L	IN	AUDIO INDICATOR LEVEL INPUT(Lch)
79	A.LEVEL R	IN	AUDIO INDICATOR LEVEL INPUT(Rch)
80	THERM	IN	THERMIC CORRECTION(SLOW CAPSTAN BRAKE CTL)

Table 6-1-1-B SYSCON CPU pin function (2/2)

6.2 TIMER CIRCUIT

6.2.1 Timer CPU pin function (IC1)

PIN NO.	LABEL	IN/OUT	NOTE
1	SW1	-	GND
2	SW2	IN	FRONT INPUT:H
3	SW3	-	GND
4	SW4	-	GND
5	D OUT	OUT	SERIAL DATA OUTPUT
6	D IN	IN	SERIAL DATA INPUT
7	IC	-	NC
8	CLK	IN	DATA TRANSFER CLOCK
9	STB	OUT	CLOCK OUTPUT PERMISSION
10	KEY1	IN	KEY SCAN DATA INPUT
11	KEY2	IN	
12	KEY3	IN	
13	KEY4	IN	
14	VDD	-	UNSW 5V
15	Seg1	OUT	SEGMENT DISPLAY DATA/KEY SCAN PULSE OUTPUT
16	Seg2	OUT	
17	Seg3	OUT	
18	Seg4	OUT	
19	Seg5	OUT	
20	Seg6	OUT	
21	Seg7	OUT	
22	Seg8	OUT	
23	Seg9	OUT	
24	Seg10	OUT	
25	Seg11	OUT	SEGMENT DISPLAY DATA OUTPUT
26	Seg12	OUT	
27	Seg13	OUT	
28	Seg14	OUT	
29	Seg15	OUT	
30	Seg16	OUT	
31	Grid11	-	COLUMN DISPLAY DATA OUTPUT(GRID CONTROL)
32	Grid10	-	
33	VDD	-	UNSW 5V
34	VEE	-	FDP DRIVE(-28V)
35	Grid9	OUT	COLUMN DISPLAY DATA OUTPUT(GRID CONTROL)
36	Grid8	OUT	
37	Grid7	OUT	
38	Grid6	OUT	
39	Grid5	OUT	COLUMN DISPLAY DATA OUTPUT(GRID CONTROL)
40	Grid4	OUT	
41	Grid3	OUT	
42	Grid3	OUT	
43	Grid2	OUT	
44	Grid1	OUT	
45	VDD	-	UNSW 5V
46	NC	-	NC
47	NC	-	NC
48	NC	-	NC
49	HYPER BASS	OUT	HYPER BASS LED CONTROL(ON:H)
50	OPERATION	OUT	POWER LED CONTROL(ON:H)
51	VSS	OUT	GND
52	OSC	-	NOT USED

Table 6-2-1 TIMER CPU pin function.